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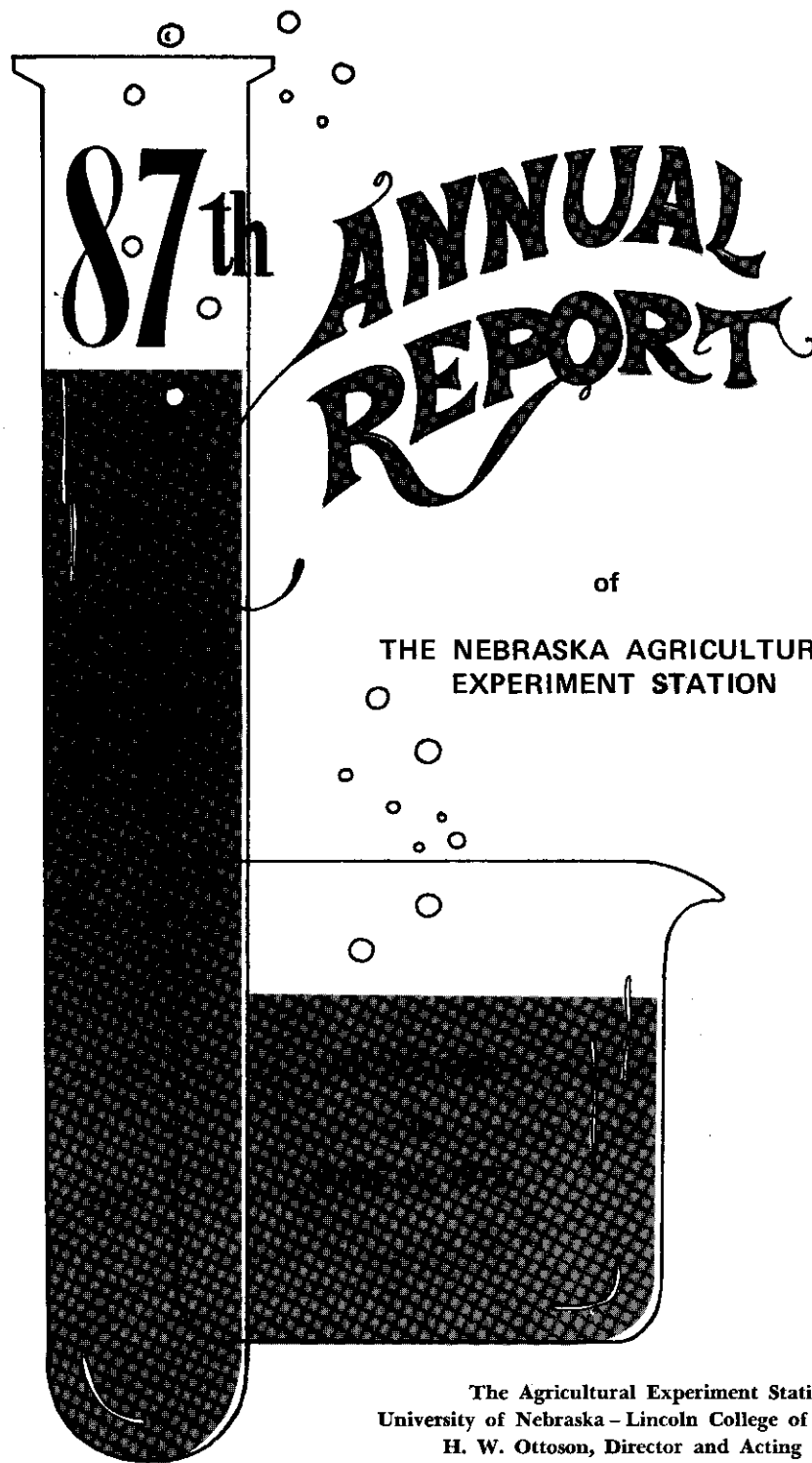


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87th

ANNUAL REPORT

of

THE NEBRASKA AGRICULTURAL
EXPERIMENT STATION

The Agricultural Experiment Station
University of Nebraska - Lincoln College of Agriculture
H. W. Ottoson, Director and Acting Dean

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Issued January 1974, 1500

FOREWORD

The 87th Annual Report of the Nebraska Agricultural Experiment Station contains a list of all active projects during July 1, 1972 to June 30, 1973, a list of Station publications, staff members, and a financial report. Information derived from the various research projects is published in bulletins, circulars, scientific and trade journals, in the *Nebraska Experiment Station Quarterly* and as mimeographed departmental reports. Station bulletins and the *Quarterly* may be obtained free from any county agricultural agent or by writing to the Director of the Experiment Station, University of Nebraska-Lincoln College of Agriculture, Lincoln, Nebraska 68503. Reprints of most journal articles may be obtained by writing directly to the authors.

Howard W. Ottoson
Director and Associate Dean ¹

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Robert R. Koefoot, Grand Island
James H. Moylan, Omaha
Robert J. Prokop, Omaha
Robert Raun, Minden
Edward Schwartzkopf, Lincoln
Kermit Wagner, Schuyler

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James H. Zumberge, Chancellor of the University of Nebraska-Lincoln
Francis L. Schmehl, Ph.D., Research Administrator

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Howard W. Ottoson, Ph.D., Associate Dean and Director
Robert W. Kleis, Ph.D., Associate Director
Warren W. Sahs, Ph.D., Assistant Director and Supervisor, University Field Laboratory
Leslie F. Sheffield, Ph.D., Assistant Director and Coordinator, Irrigation Development Program
Patricia J. Sailor, Ph.D., Assistant Director and Associate Dean, College of Home Economics

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J. D. Eastin^{2,4} Ph.D., Professor—Sorghum Physiology
L. F. Elliott^{2,5} Ph.D., Associate Professor—Soil Microbiology
J. R. Ellis^{2,5} Ph.D., Associate Professor—Soil Microbiology
A. D. Flowerday^{1,2} Ph.D., Professor—Crop Production

¹Teaching Staff

²Station Staff

³Extension Staff

⁴Leave of Absence

⁵Cooperative, USDA

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 H. J. Gorz^{2,5} Ph.D., Professor—Forage Genetics
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 F. A. Haskins^{1,2} Ph.D., Professor—Biochemical Genetics
 J. H. Hultquist^{2,5} Ph.D., Instructor—Sorghum Physiology
 V. A. Johnson^{2,5} Ph.D., Professor—Winter Wheat Breeding
 W. R. Kehr^{2,5} Ph.D., Professor—Alfalfa Breeding
 L. A. Klepper² Ph.D., Assistant Professor—Crop Physiology
 Delno Knudsen^{2,3} Ph.D., Assistant Professor—Soil Testing
 D. W. Lancaster² M.S., Associate Professor—Crop Improvement
 T. L. Lavy^{1,2} Ph.D., Associate Professor—Weed Science
 D. T. Lewis^{1,2} Ph.D., Assistant Professor—Soil Survey
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 L. C. Newell^{2,5} Ph.D., Professor—Grass Breeding
 R. A. Olson^{1,2} M.S., Professor—Soil Fertility
 L. J. Perry^{1,2} Ph.D., Assistant Professor—Range Management
 G. A. Peterson^{1,2} Ph.D., Associate Professor—Soil Fertility
 Wm. M. Ross^{2,5} Ph.D., Professor—Sorghum Breeding
 D. H. Sander^{2,3} Ph.D., Professor—Soil Fertility
 J. W. Schmidt^{1,2} Ph.D., Professor—Small Grain Breeding
 G. E. Schuman^{2,5} M.S., Instructor—Soil Microbiology
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 R. A. Wiese^{2,3} Ph.D., Associate Professor—Soil Fertility

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Animal Science

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Robert D. Appleman^{1,2} Ph.D., Professor—Dairy Production
Vincent H. Arthaud^{1,2} M.S., Associate Professor—Beef Production
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Ted H. Doane^{1,2,3} Ph.D., Professor—Sheep Production
Earl F. Ellington^{1,2} Ph.D., Associate Professor—Beef Physiology
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B. D. Moser^{1,2} Ph.D., Assistant Professor—Swine Nutrition
Foster G. Owen^{1,2} Ph.D., Professor—Dairy Nutrition
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(Emeritus)
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Biochemistry and Nutrition

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Economics (Agricultural)

Glen T. Vollmar^{1,2,3} Ph.D., Professor and Chairman of Department
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Allen Wellman^{2,3} Ph.D., Associate Professor—Marketing

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J. P. Holman^{1,2,3} M.S., Professor—Experiment Station Editor
Janet Poley^{1,2,3} M.S., Assistant Professor—Home Economics Radio and Television
Grant I. Johnson^{2,3} B.A., Assistant Professor—Press
James Randall^{2,3} M.S., Assistant Professor—Radio

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M. G. McCreight^{1,2} M.S., Associate Professor—Student Teaching and Contests
R. L. Douglass^{1,2} Ph.D., Assistant Professor—Methods of Instruction and In-service Education

Education and Family Resources

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Environment for Low-Income Families
Hazel Crain^{1,2} Ph.D., Assistant Professor—Development of Teaching Skills
M. Ann Irvine^{1,2} M.S., Instructor—Development of Teaching Skills
Shirley Kreutz^{1,2} Ed.D., Associate Professor—Development of Teaching
Skills
Florence Walker^{1,2} Ph.D., Associate Professor—Home Management-Family
Economics

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Analysis
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 G. R. Manglitz^{2,5} Ph.D., Associate Professor—Forage Insect Investigations
 Z. B. Mayo, Jr.² Ph.D., Assistant Professor—Corn Insects
 K. P. Pruess^{1,2} Ph.D., Associate Professor—Biology and Ecology of Crop Insects
 R. E. Roselle^{2,3} M.S., Professor—Economic Entomology
 Robert Staples^{1,2} Ph.D., Associate Professor—Insect Transmission of Plant Pathogens

Food and Nutrition

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 Constance Kies^{1,2} Ph.D., Professor—Nutrition
 Marie Knickrehm^{1,2} Ph.D., Professor—Institutional Administration
 Pauline Paul^{1,2} Ph.D., Professor—Food Science
 Diane Ruyack^{1,2} M.S., Instructor—Food Science

Food Science and Technology

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 R. G. Arnold^{1,2,3} Ph.D., Associate Professor—Flavor Chemistry
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 R. B. Maxcy^{1,2} Ph.D., Professor—Food Microbiology
 L. D. Satterlee^{1,2} Ph.D., Associate Professor—Food Protein Chemistry
 K. M. Shahani^{1,2} Ph.D., Professor—Food Chemistry

Horticulture and Forestry

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 W. T. Bagley^{1,2} M.S., Associate Professor—Forestry
 B. L. Blad² Ph.D., Assistant Professor—Climatology
 D. P. Coyne^{1,2} Ph.D., Professor—Horticulture
 E. J. Kinbacher^{1,2} Ph.D., Professor—Physiology
 R. J. Lemeur² Ph.D., Postdoctoral Fellow—Climatology
 O. S. Malamud² M.S., Instructor—Horticulture
 R. E. Neild^{1,2} Ph.D., Associate Professor—Horticulture
 R. B. O'Keefe^{1,2} Ph.D., Professor—Horticulture
 R. A. Read^{2,5} M.F., Associate Professor—Forestry

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 S. S. Salac^{1,2,3} Ph.D., Assistant Professor—Ornamental Horticulture
 C. Y. Sullivan² Ph.D., Associate Professor—Physiology
 D. F. Van Haverbeke^{2,5} Ph.D., Associate Professor—Forestry
 S. B. Verma² Ph.D., Postdoctoral Fellow—Climatology

Human Development and the Family

J. C. Woodward^{1,2,3} Ph.D., Professor—Loneliness—and Chairman of Department
 Ruby Gingles^{1,2} M.S., Professor—Middle Age and Aging
 Violet Kalyan-Masih^{1,2} Ph.D., Associate Professor—Cognitive Development (Piaget)
 Jacqueline Voss^{1,2} Ed.D., Associate Professor—Parent Child Relationships

Library

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 R. E. Voeltz^{1,2} B.S., M.S., M.S.L.S., Senior Assistant Librarian

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 Glenn Peterson^{2,5} Ph.D., Professor—Tree Diseases
 J. W. Riffle^{2,5} Ph.D., Associate Professor—Tree Diseases
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 A. K. Vidaver² Ph.D., Assistant Professor—Bacterial Diseases

Poultry Science

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 R. M. Case^{1,2} Ph.D., Assistant Professor—Wildlife Management

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T. W. Sullivan^{1,2,3} Ph.D., Professor—Poultry Nutrition

Statistics

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Patricia Sailor^{1,2} Ph.D., Professor—Clothing Awareness and Perception
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R. E. Coupe² B.S., Instructor—SPF Field Coordinator
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N. R. Underdahl² B.A., M.S., Professor—Swine Diseases

Regional Stations ⁷

Northeast Station, Concord

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Russell S. Moomaw^{2,3} M.S., Assistant Professor—Agronomy

George W. Rehm^{2,3} Ph.D., Assistant Professor—Agronomy
Walter L. Tolman^{2,3} B.S., Assistant Professor—Animal Science

North Platte Station, North Platte

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D. Murray Danielson² Ph.D., Associate Professor—Animal Science (Swine)
Ben L. Douplik, Jr.^{2,3} Ph.D., Associate Professor—Plant Pathology
Philip H. Grabowski² B.S., Assistant Professor—Agronomy (Outstate Testing)
Clair M. Hibbs² D.V.M., Ph.D., Professor—Veterinary Science
James T. Nichols^{2,3} Ph.D., Associate Professor—Agronomy (Range Management)
Paul T. Nordquist² Ph.D., Assistant Professor—Agronomy (Sorghum Breeding)

Robert E. Perry^{2,3} M.S., Associate Professor—Agricultural Economics
James L. Peters^{2,3} M.S., Assistant Professor—Information
Myron G. A. Rumery² B.S., Associate Professor—Animal Science (Beef)
Darryl E. Smika^{2,5} Ph.D., Associate Professor—Agronomy (Soils)
Bert R. Somerhalder^{2,3} M.S., Associate Professor—Agricultural Engineering
Roger D. Uhlinger^{2,3} Ph.D., Associate Professor—Horticulture and Forestry
R. Gene White^{2,3} D.V.M., M.S., Associate Professor—Veterinary Science
Gail A. Wicks^{2,3} M.S., Associate Professor—Agronomy (Weed Science)

Scotts Bluff Station, Mitchell

J. L. Weihing^{2,3} Ph.D., Professor and Superintendent of Station
L. W. Andersen^{2,3} Ph.D., Associate Professor and Assistant Superintendent
F. N. Anderson^{1,2} M.S., Assistant Professor—Agronomy
C. L. Ashburn^{2,3} B.S., Associate Professor—Agricultural Economics
L. A. Daigger^{2,3} M.S., Professor—Agronomy
C. R. Fenster^{2,3} B.S., Professor—Agronomy
D. W. Fonken^{2,3} M.S., Assistant Professor—Agricultural Engineering
A. F. Hagen^{2,3} M.S., Assistant Professor—Entomology
E. D. Kerr^{2,3} Ph.D., Assistant Professor—Agronomy
L. A. Nelson^{1,2} Ph.D., Assistant Professor—Agronomy
D. S. Nuland^{2,3} M.S., Assistant Professor—Horticulture and Forestry
Hollis Shull^{2,5} M.S., Associate Professor—Agricultural Engineering
J. S. Webster² M.S., Assistant Professor—Agronomy and Manager of Northwest Agricultural Laboratory

South Central Station, Clay Center

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Gary N. Dornhoff^{2,3} Ph.D., Assistant Professor—Agronomy
B. L. Doupnik^{2,3} Ph.D., Assistant Professor—Plant Pathology
Kenneth D. Frank^{2,3} Ph.D., Assistant Professor—Agronomy
H. Robert Mulliner^{2,3} B.S., Associate Professor—Agricultural Engineering
Leroy L. Peters^{2,3} Ph.D., Associate Professor—Entomology

U.S. Meat Animal Research Center, Clay Center

K. E. Gregory^{2,5} Ph.D., Director of Research Center
T. E. Bond^{2,5} Ph.D., Research Engineer
R. K. Christenson² Ph.D., Research Physiologist
J. D. Crouse^{2,5} Ph.D., Research Food Technologist
L. V. Cundiff^{2,5} Ph.D., Research Geneticist
G. E. Dickerson^{2,5} Ph.D., Research Geneticist
S. E. Echternkamp^{2,5} Ph.D., Research Physiologist
H. A. Glimp^{2,5} Ph.D., Research Chemist
R. M. Koch² Ph.D., Research Geneticist
D. B. Laster^{2,5} Ph.D., Research Physiologist
C. R. Long^{2,5} Ph.D., Research Geneticist
R. L. Prior^{2,5} Ph.D., Research Chemist
H. S. Teague^{2,5} Ph.D., Animal Scientist

University Field Laboratory, Mead

F. C. Hastert² B.S., Facilities Manager

NEBRASKA AGRICULTURAL EXPERIMENT STATION ²⁰ RESEARCH PROJECTS ⁶

Research projects are listed by departments. An asterisk (*) indicates that the project was discontinued in fiscal 1978-79.

Administration ⁷

- 1-001 General administration of federal grant funds research. E. F. Frolik and H. W. Ottoson.
1-004 Regional Research Coordination, North Central Region. H. W. Ottoson.

Agronomy ↗

- 12-001 Corn breeding and genetics. W. A. Compton.
- 12-002 Improvement and evaluation of oats and barley. J. W. Schmidt.
- 12-005 Developing and applying principles of alfalfa improvement. W. R. Kehr.
- 12-006 Cultural, ecological and physiological studies with various agronomic crops. A. D. Flowerday.
- 12-007 Systems of weed control. O. C. Burnside.
- 12-008 Improvement of forage grasses by breeding. L. C. Newell.
- 12-009 Sorghum breeding and genetics. W. M. Ross.
- 12-011 Soil mineral, chemical and physical properties as related to genesis, classification, and mapping. D. T. Lewis.
- 12-012 Breeding and genetics of soybeans. J. H. Williams.
- ~~*12-017 Soil properties in relation to fertilization of leguminous crops. R. C. Sorensen.~~
- 12-023 Soil management investigations toward improving the productivity of irrigated soils. R. A. Olson.
- ~~*12-026 Development and utilization of improved pasture techniques for the evaluation of forage grasses. E. C. Conard.~~
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- *12-045 Ecological, morphological, chemical and nutritional changes occurring in Great Plains grasses. L. J. Perry.
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- 12-049 Quantitative genetic investigations. C. O. Gardner.
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- 12-055 Breed and evaluate wheat varieties for Nebraska. V. A. Johnson and J. W. Schmidt.
- 12-057 Genetic, physiological, morphological, and anatomical studies of wheat. V. A. Johnson.
- 12-061 Detachment of soil particles in simulated rainfall. A. P. Mazurak.
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- 12-065 Influence of physical properties of soil on plant growth. A. P. Mazurak.
- 12-069 Physiological processes affecting growth and development of grain sorghum. J. D. Eastin, M. D. Clegg, J. W. Maranville.
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- 12-080 Soil factors and mineral nutrient uptake by plants. R. C. Sorensen.
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- 12-084 Evaluating plant nutrient needs and product quality. Delno Knudsen.
- 12-085 Improving grain sorghum, wheat, and forage crop production through improved soil fertilizer practices. Donald H. Sander.
- 12-086 Soil fertility investigations related to corn and soybean and to irrigated production of these crops. R. A. Wiese.
- ~~12-087~~ Foundation Seed. Richard Mills.

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- 13-001 The nature of genetic variability in gene pools of swine. P. J. Cunningham.
- 13-003 Beef carcass evaluation. V. H. Arthaud.
- ~~13-007~~ ~~Breeding tests of population genetic theory. G. T. Blunn.~~
- 13-011 Utilization of protein and energy sources by swine. E. R. Peo, Jr. and B. D. Moser.
- 13-014 Factors influencing the utilization of protein and energy sources by beef cattle. Stanley Farlin.
- 13-015 The feeding value of complete ensiled rations. T. J. Klopfenstein.
- 13-016 Influence of energy intake on reproductive performance in swine. D. R. Zimmerman.

- ~~*13-020 The development and improvement of laboratory methods for determining forage quality. T. J. Klopfenstein.~~
- 13-022 Mineral metabolism in swine. E. R. Peo, Jr. and B. D. Moser.
- 13-023 Evaluation of pork products and accelerated processing methods. R. W. Mandigo.
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- 13-028 Beef cow management. John K. Ward.
- 13-029 Genetic improvement of efficiency in the production of quality pork. P. J. Cunningham.
- 13-033 Influence of hormone administration on reproductive performance in the laboratory rat. A. B. Schultze.
- ~~*13-034 Efficiency of feed utilization by dairy cattle. F. G. Owen and R. D. Appleman.~~
- ~~*13-035 Dairy herd management. R. D. Appleman.~~
- 13-036 Improving large dairy herd management practices. Robert D. Appleman and Foster G. Owen.
- 13-037 Complete feed rations for dairy cattle. Foster G. Owen and R. D. Appleman.

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- 15-005 Harvesting, processing and evaluating alfalfa and other forage crops. R. L. Ogden.
- 15-011 Analytical advisory and service laboratory. R. M. Hill.
- 15-012 Physico-chemical properties at the molecular level of surfaces of biologically important proteins. R. M. Hill.
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- 15-021 Biochemical mechanisms of susceptibility and resistance and the causes of damage to corn from southern leaf blight. J. M. Daly and L. D. Dunkle.

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- 10-034 Economics of resource use in the Sandhills area of Nebraska. A. W. Epp.
- ✓ 10-043 Economic effects of alternative farm enterprises in wheat producing areas of Nebraska. G. A. Helmers and W. F. Lagrone.
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- 10-067 Acquisition and use of external capital in rural Nebraska. Thomas L. Frey and Paul Gessaman.

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~~24-011~~ The survey of attitudes of agricultural students. V. G. Williams and R. D. Dillon.

~~*24-012~~ Automated instruction vs. lecture demonstration in agricultural mechanics. U. E. Wonderoff and R. L. Peterson.

24-014 New clientele and programs needed for occupational education in agriculture. R. D. Dillon.

24-015 Approaches to occupational education and teacher preparation for rural development. James T. Horner and Richard Douglass.

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90-007 Rehabilitation of handicapped women. Lois O. Schwab.

~~*92-001~~ A teaching-learning design for specific areas of home economics in secondary school and extension programs in rural Nebraska. Shirley Kreutz.

92-002 Developing technical skills of teaching. H. M. Crain.

~~92-003~~ Relationship between a home economics curriculum designed for concept learning and transfer of knowledge. Shirley Kreutz.

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~~11-002~~ Use of radio-frequency energy for insect control and conditioning of farm products. S. O. Nelson and L. E. Stetson.

11-003 Planning farmstead buildings and livestock production systems. O. E. Cross and E. A. Olson.

~~*11-007~~ The integration of machine operations and cultural practices in irrigated agriculture. B. R. Somerhaider.

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- 11-016 The mechanics and measurement of soil tillage. G. W. Steinbruegge.
- 11-021 Operations research on mechanized systems for cutting, curing and handling hay. G. M. Petersen, K. L. Von Bargen, and S. A. Weeks.
- 11-025 Operator comfort, health and safety in mobile agricultural operations. G. W. Steinbruegge and Rollin Schnieder.
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- 11-029 Management and control of beef feedlot waste. C. B. Gilbertson and O. E. Cross.
- 11-030 Development and operation of irrigation systems. Paul Fischbach, W. E. Splinter, Warren W. Sahs.
- ~~*11-031~~ 11-031 Utilization of livestock waste to abate pollution. O. E. Cross, A. P. Mazurak, and Leon Chesnin.
- ~~11-033~~ 11-033 Dynamics and energetics of the soil plant-atmosphere continuum (SPAC). W. E. Splinter, N. A. Rosenberg and J. D. Eastin.
- 11-034 Temporary storage of high-moisture feed grains. T. L. Thompson and M. G. Boosalis.
- 11-035 Animal waste management with pollution control. O. E. Cross.
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- 11-038 Recharge of aquifers for purpose of irrigation withdrawal. Deane M. Manbeck.
- 11-039 Measuring and defining rheological properties of food and food products from engineering concepts. L. L. Bashford.

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- 17-002 Arthropod transmission of plant disease pathogens. Robert Staples.
- ~~*17-005~~ 17-005 The biology, ecology and control of forage insects. G. R. Manglitz.
- 17-007 The photosensitivity in insects. J. H. Ball *f1, 9.*
- ~~*17-008 Investigations of field bean insects with emphasis on the western bean cutworm *Lexagrotis albicosta*. A. F. Hagen.~~
- ~~*17-010~~ 17-010 Biology and control of human and livestock insects. C. M. Jones.
- ~~*17-016 Field and laboratory investigations of insecticides. K. P. Praess.~~
- 17-022 Biology, ecology and control of insects affecting corn. R. E. Hill, H. J. Ball, and Z. B. Mayo.
- 17-023 Anatomy and histopathology of Nebraska pest insects. T. J. Helms.

- 17-024 Biology and integrated control of the greenbug on sorghums and small grains. Robert Staples.
- 17-025 Studies of the European corn borer—feasibility of genetic manipulation to control the species. R. E. Hill.
- 17-026 Range and pasture insects. K. P. Pruess.
- 17-027 Injurious insects affecting forage legumes and forage and turf grasses. G. R. Manglitz and S. D. Kindler.

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- *91-006 Minimum cost formulation of menus. M. E. Knickrehm.
 - 91-007 Metabolic interrelationships affecting nutrient energy requirements of humans. Constance Kies.
 - 91-008 Nutritional status of population groups. Hazel Fox.
 - 91-009 Influence of heat on the fibrous proteins of beef muscle. Pauline Paul.
 - *91-010 Interrelationships of amino acids and vitamin utilization. Constance Kies and Hazel Fox.
 - 91-013 Changes in food practices for better nutrition. H. M. Fox.
 - 91-014 Productivity of food service operations. M. E. Knickrehm.
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- 16-008 Microenvironment of liquid food handling equipment. R. B. Maxcy.
- *16-015 Dairy plant management. T. A. Evans.
- *16-017 Study and modification of milk fat by controlled lipase action for its use in foods. K. M. Shahani.
- *16-019 Detection and control of flavor changes of foods. R. G. Arnold.
- 16-021 Effect of various processing techniques on the physicochemical properties of food proteins. L. D. Satterlee.
- 16-022 The effect of processing on potentially toxic microorganisms and metabolites in foods. Lloyd Bullerman.
- 16-023 Irradiation processing of foods for quality protection. R. B. Maxcy.
- 16-024 Food processing influences on nutrient composition. T. E. Hartung.
- 16-025 Improvement in quality of various cheeses and other dairy foods. T. A. Evans.
- 16-026 Significance, study and use of enzymes in the food industry K. M. Shahani.

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- *20-003 ~~Bean breeding and genetics. Dermot P. Coyne.~~
- *20-006 Improvement of vegetable crops. D. P. Coyne and R. B. O'Keefe.
- 20-010 Improvement of potatoes. R. B. O'Keefe and O. S. Malamud.

- 20-014 Evaluation of varieties and cultural practices in vegetables. D. S. Nuland and R. E. Neild.
- * (20-021) Agroclimatic parameters to define the growing season of selected vegetables in Nebraska. R. E. Neild.
- (20-023) Windbreak shelter effects. W. T. Bagley.
- (20-024) Effect of temperature extremes on growth and development of plants. E. J. Kinbacher.
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- (20-029) Adaptation, improvement and management of turfgrasses and other ground covers for Nebraska. E. J. Kinbacher.
- (20-030) Collection, propagation, culture, evaluation and maintenance of plant materials for landscaping. Sotero Salac and J. O. Young.
- (20-031) Measure evapotranspiration and photosynthesis to evaluate techniques for improvement of water use. N. J. Rosenberg.
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- * 20-034 Factors affecting post-harvest market quality of processed potatoes. R. B. O'Keefe.
- 20-035 Biophysical control of water loss. C. Y. Sullivan, J. D. Eastin, and E. J. Kinbacher.
- 20-036 Genetics, breeding and cultural interactions of beans (*Phaseolus vulgaris* L.). Dermot P. Coyne.

Human Development and the Family

- * (93-007) Factors affecting patterns of living in disadvantaged families. J. C. Woodward.
- (93-008) Loneliness and solitude—phenomena, incidence and factorial relationships. J. C. Woodward.
- ~~(93-009) Helping the disadvantaged and educationally retarded child of the Indian. V. Kalyan Masih.~~
- 93-010 Perceived parent-child relationships, parent-child value systems, and personality development. J. H. Voss.
- 93-011 The middle years: developmental changes between thirty and sixty-five. Ruby H. Gingles.

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- 21-001 Plant disease survey and special investigations. Plant Pathology staff.
- 21-003 Purification and characterization of plant viruses. M. K. Brakke and W. G. Langenberg.
- 21-005 Fundamental studies on root diseases of plants. M. G. Boosalis.

- 21-006 Diseases of forest and shade trees. G. W. Peterson.
- 21-010 Plant pathology outstate testing. D. S. Wysong, L. T. Palmer, and M. G. Boosalis.
- 21-012 Electron microscopy in agricultural research. W. G. Langenberg, M. K. Brakke, and E. M. Ball.
- 21-015 Epidemiology of vegetable diseases in Nebraska. J. R. Steadman.
- 21-016 Biology and control of bacterial diseases of crops. M. L. Schuster.
- 21-017 Physiology of fungal spore germination. J. W. Van Etten.
- ~~21-018 Bacteriocins and bacteriophages of soybean bacterial pathogens. A. K. Vidaver.~~
- 21-019 Interactions of soybean bacterial pathogens and their antagonists. A. K. Vidaver, J. R. Steadman and M. G. Boosalis.
- 21-020 Biological and physiological aspects of corn and sorghum diseases. Larry D. Dunkle.

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- 22-003 Physiological and physical response of poultry to environmental variables. F. B. Mather.
- 22-005 Nutrient interrelationships, feed additives and mineral sources in poultry diets. T. W. Sullivan.
- 22-010 Factors affecting the quality and characteristics of poultry meat products. G. W. Froning.
- 22-012 The role of physiological food intake regulators in poultry. E. W. Gleaves.
- 22-014 Factors affecting quality (physical, chemical and microbiological) in eggs and egg products. T. E. Hartung and G. W. Froning.
- * 22-015 Decomposition and dispersion of excreta from laying hens and turkeys. T. E. Hartung and O. E. Cross.
- 22-017 Physiological responses of chickens to varying environments. F. B. Mather and J. A. DeShazer.
- 22-018 Improved processing and utilization of poultry products. G. W. Froning, Richard Dam, and T. E. Hartung.

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- ~~* 94-003 Analysis of fabric dimension related to serviceability. B. J. Scruggs.~~
- ~~94-004 Study of perception, creativity and other factors as they relate to design. Audrey Newton.~~
- 94-005 Developmental aspects of clothing awareness. P. J. Sailor.

- 94-006 Analysis of factors influencing consumer awareness of care labeling systems for textile products. B. J. Scruggs.

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- 14-001 Animal disease diagnosis and surveillance in Nebraska. O. D. Grace.
 14-002 Diseases of young pigs. N. R. Underdahl, M. J. Twiehaus and department staff.
 14-004 Bionomics, etiology, and control of the parasites of Nebraska livestock. D. L. Ferguson and M. J. Twiehaus.
~~*14-006 Disease study and control in specific pathogen free herds. M. J. Twiehaus.~~
 14-009 Prevention and control of enteric diseases of swine. N. R. Underdahl and O. D. Grace.
 14-010 Gastrointestinal transfer of proteins. L. C. Payne and M. B. Rhodes.
 14-012 Immunological properties of parasite enzymes in sheep and swine. Marvin B. Rhodes.
 14-013 Diseases of the central nervous system of cattle and swine. C. A. Mebus and Norman Underdahl.
 14-014 Bovine respiratory diseases. Ernest Stair, M. B. Rhodes and C. A. Mebus.
 14-015 Biological control of internal parasites in livestock. M. B. Rhodes, D. L. Ferguson, and C. A. Mebus.

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- 42-001 Influence of certain housing and management regimes on confinement rearing of growing-finishing pigs. R. D. Fritschen.

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- * (43-002) Development of principles and practices of weed control for Nebraska. G. A. Wicks.
 OK (43-006) Relating nutrition and mangement to growth and development in programming pork production. D. M. Danielson.
 * (43-009) Relation of cropping and tillage practices to crop production and maintenance of soil fertility under dryland conditions. D. E. Smika.
 43-020 Animal disease surveillance in western Nebraska. R. G. White and C. M. Hibbs.
 43-021 Determining nutritive value of forages with beef cattle. D. C. Clanton.
 (43-022) Development of ornamental plants for Nebraska as a Great Plains state. R. D. Uhlinger.
 * (43-023) Economic analyses of irrigated grain and forage production in west central Nebraska. R. E. Perry.
 43-024 Injurious insects affecting livestock in Nebraska. J. B. Campbell.
 43-025 Irrigated pasture investigations. James Nichols, D. C. Clanton, and B. R. Somerhalder.

- 43-026 Agricultural production systems for the Nebraska Sandhills. Leo E. Lucas.

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- ~~40-004~~ Engineering systems for water control in crop production. D. M. Manbeck and D. W. Fonken.
- ~~44-002~~ Dry bean variety test. F. N. Anderson and D. S. Nuland.
- 44-003 Maximum production of crops under irrigation in western Nebraska. F. N. Anderson and C. L. Ashburn.
- 44-004 Fertilizer and manure application for production of continuous corn. F. N. Anderson.
- 44-005 Small grain investigation. L. A. Daigger and Lenis A. Nelson.
- ~~44-006~~ Alfalfa variety testing and corn testing. F. N. Anderson and Lenis A. Nelson.
- ~~44-007~~ Effects of high rates of phosphate fertilization on the production of corn. F. N. Anderson.
- 44-010 Fertilizers for sugar beet production. F. N. Anderson.
- ~~44-011~~ Development of dryland cropping systems for western Nebraska. C. R. Fenster.
- ~~44-012~~ Improvement of millet production by breeding and cultural studies. Lenis A. Nelson.
- 44-013 Biology and control of insect pests of western Nebraska. Arthur Hagen.

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- 48-001 Irrigated row crop production systems in South Central Nebraska. Kenneth D. Frank.
- 48-002 How cultural practices affect root and stalk rot diseases of corn and sorghum. Ben L. Doupnik, Jr.
- 48-003 Biology and control of crop insects in south central Nebraska. Leroy L. Peters.

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- 46-002 Improvement of beef cattle through breeding methods. R. N. Koch, G. E. Dickerson and L. V. Cundiff.
- 46-003 Improvement of beef cattle through breeding methods. L. V. Cundiff, G. E. Dickerson and R. M. Koch.
- 46-004 Improvement of beef cattle through breeding methods. D. B. Laster, C. R. Long, and K. E. Gregory.

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- 45-001 Field Laboratory development. Warren W. Sahs.

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Nebraska Experiment Station Quarterly Articles

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Departmental Reports

Department of Agronomy

Report Number 1, A Survey of Silage Crops and Their Quality. W. J. Moline and W. S. Ball.

Report Number 2, Irrigated Pastures Need Fertilizer. W. J. Moline, George Rehm and J. T. Nichols.

Department of Animal Science

1973 Nebraska Beef Cattle Report.

1973 Nebraska Swine Report.

1972 Nebraska Dairy Report.

Department of Agricultural Economics

Report Number 60, Livestock and Crop Planning Data Western Nebraska. Duane L. Marquis, W. F. Lagrone and Glenn A. Helmers.

Report Number 61, Feeder-Pig Farrowing Firms: How They Work. P. W. Lytle and Robert J. Boyd.

Department of Agricultural Communications

Report Number 3, Radio Listening Habits of Nebraska Farmers and Ranchers. James K. Randall, Robert J. Florell, Dick Lorah and Marshall Logan.

Department of Agricultural Education

Report Number 39, History of Vocational Agriculture in Nebraska to 1973. M. G. McCreight.

Report Number 40, Summaries of Studies in Agricultural Education. . . 1971-1972. J. T. Horner.

Department of Agricultural Engineering

Report Number 1, Nebraska Farm Accident Study – A Report on Accidents Occurring to Farm Families and Hired Farm Families and Hired Farm Labor in 1970. Rollin Schnieder, Robert J. Florell, Dale Baker and Richard Lorah.

Department of Horticulture and Forestry

Report Number 94, Genetic Control of the Reaction to Common Blight Bacteria (*Xanthomonas phaseoli*) in Relation to Stage of Plant Development and Bacterial Multiplication in Beans (*Phaseolus vulgaris* L.). Dermot P. Coyne.

Report Number 95, Progress in Breeding Early Maturing California Small White Type Dry Bean Adapted to Nebraska. Dermot P. Coyne.

Report Number 96, Research in Evapotranspiration 1969-72—Completion Report to the Office of Water Resources Research, U. S. Dept. of the Interior. N. J. Rosenberg, W. T. Bagley, Blaine L. Blad, Kirk W. Brown, Paul C. Doraiswamy and David R. Miller.

Report Number 97, A Climatological Analysis of the 1972 Season in the Eastern Crop Reporting District with Particular Reference to Fall Harvest Operations. R. E. Neild.

Report Number 98, Evaluation of Common Blight and Bacterial Wilt Tolerant Great Northern Dry Bean Breeding Lines and Varieties in 1972. Dermot P. Coyne and M. L. Schuster.

Report Number 99, Vegetable Research Report - 1972 Summary. Dermot P. Coyne, E. J. Kinbacher, R. E. Neild, R. B. O'Keefe, M. L. Schuster, et al.

Department of Poultry Science

Report Number 72-4-2B, The Effect of Various Feed Concentrates on Egg Flavor. G. W. Froning and E. W. Gleaves.

Statistical Laboratory

Report Number 9, A General Factorial Analysis of Variance Program for the IBM 360.

Department of Food and Nutrition

Report Number 5, Food and Nutrition Books by the Reading Public. Dalia Restrepo, Hazel Fox and Constance Kies.

Miscellaneous Publications

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|-------|---|
| MP 24 | Nebraska Computer Feed Formulation Data, Feed Ingredient Analysis and Ration Specifications and Restrictions (47 pages). E. W. Gleaves, P. Q. Guyer, J. G. Kendrick, F. G. Owen, E. R. Peo, Jr. and T. W. Sullivan. 2,500 copies. |
| MP 26 | Theoretical Gains for Different Population Improvement Procedures (22 pages). L. T. Empig, C. O. Gardner and W. A. Compton. 2,000 copies. |

- MP 27 Author's Guide (31 pages). Grant I. Johnson, J. P. Holman and Ralston J. Graham. 500 copies.
- MP 28 1st International Winter Wheat Conference (344 pages). V. A. Johnson, coordinator. 1,000 copies.

North Central Regional Publications

- NCR 214 Predicting Seed and Forage Yields of Alfalfa Open-Pollinated Progenies. Published at South Dakota State University.
- NCR 215 Input Marketing Research Yesterday, Today and Tomorrow. Published at Michigan State University.

Journal Series

(Technical Article and Paper Published or Submitted for Publication)

2749. Let's Take Another Look At Economies of Size in Cattle Feeding. Ralph D. Johnson. Canadian Journal of Agricultural Economics. v20 (3), November, 1972.
2874. Crown-Freezing and Natural Survival Comparisons of F_2F_4 Bulk Populations from 25 Winter Barley Crosses. D. D. Warnes and V. A. Johnson. Crop Science. v12:403-405, July-August, 1972.
2922. Measured and Modelled Effects of Microclimate Modification on Evapotranspiration by Irrigated Crops in a Region of Strong Sensible Heat Advection. N J. Rosenberg and K. W. Brown. UNESCO. 539-546, 1973.
2942. Environmental Temperature and the Utilization of *B*-Carotene by the Rat. John Edgar Smith and Raymond Borchers. Journal of Nutrition. v102 (8):1017-1024, August, 1972.
2964. Adolescent Pregnancy: Association of Dietary and Obstetric Factors. Jo Ann Seiler and Hazel M. Fox. Home Economics Research Journal. v1 (3):188-194, March, 1973.
3000. Comparative Growth of Salmonellae, Coliforms, and Other Members of the Microflora of Raw and Radurized Ground Beef. N. P. Tiwari and R. B. Maxcy. Journal of Milk and Food Technology. v35 (3):455-460, August, 1972.
3016. Carbon Dioxide Exchange in Water-stressed Sorghum. Linda L. Shearman, J. D. Eastin, C. Y. Sullivan and E. J. Kinbacher. Crop Science. v12:406-409, July-August, 1972.
3024. Temporary Storage of High-Moisture Shelled Corn Using Continuous Aeration. Thomas L. Thompson. Transactions of the ASAE. v15 (2):333-337, 1972.

3046. Phosphorus Losses from Four Agricultural Watersheds on Missouri Valley Loess. G. E. Schuman, R. G. Spomer and R. F. Piest. Soil Science Society of America Proceedings. v37:424-427, 1973.
3055. Form and Level of Coumarin in Deer's Tongue, *Trilisa Odoratissima*. F. A. Haskins, H. J. Gorz and R. C. Leffel. Economic Botany. v26:44-48, 1972.
3065. Enzymic Aspects of Nutritional, Flavor, and Sanitary Qualities of Fish Products. Khem M. Shahani. Microbial Safety of Fishery Products. 137-150, 1973.
3076. Population Breeding in Sorghum. W. M. Ross, C. O. Gardner and P. T. Nordquist. Proceedings of the Grain Sorghum Producers Assn. Biennial Research--Utilization Conference. 93-98, 1971.
3080. A Review of Insect Resistance in the Clovers (*Trifolium* spp.). G. R. Manglitz and H. J. Gorz. Entomological Society of America. v18 (4):176-178, December, 1972.
- 3133s. Human and Animal Wastes as Fertilizers. J. R. Peterson, T. M. McCalla and George E. Smith. Fertilizer Technology & Use. 2nd Edition:557-596, 1971.
3157. Disruptive Influence of Osmic Acid and Unbuffered Chromic Acid or Inclusions of Two Plant Viruses. Willem G. Langenberg and Helen F. Schroeder. Journal of Ultrastructure Research. v40:513-526, 1972.
3165. Chemical Fallow in a Winter Wheat-Fallow Rotation. G. A. Wicks and D. E. Smika. Journal of The Weed Science Society of America. v21 (2):97-102, March, 1973.
3172. Nitrate Concentrations in Groundwater Beneath a Beef Cattle Feedlot. J. C. Lorimor, L. N. Mielke, L. F. Elliott and J. R. Ellis. Water Resources Bulletin. v8 (5):999-1005, October, 1972.
3189. Effectiveness of Hot-Air, 39-MHz Dielectric, and 2450-MHz Microwave Heating for Hard-Seed Reduction in Alfalfa. L. E. Stetson and S. O. Nelson. Transactions of the ASAE. v15 (3):530-535, 1972.
3215. A Survey of Some Common Midwestern Plants for Juvenile Hormone Activity. Joseph H. Tarnopol and Harold J. Ball. Journal of Economic Entomology. v65 (4):980-982, August, 1972.
3217. Technic for Recovery of Volatile Components from Lipids for Gas Chromatographic Analysis. R. G. Arnold and H. M. Barnhart. Journal of Dairy Science. v55 (8):1069-1072, August, 1972.
3233. Adjusting Yearling Weight Ratio for Selection on Weaning Weight. Alan Emsley, G. E. Dickerson, L. V. Cundiff and J. A. Gosey. Journal of Animal Science. v35 (1):13-19, July 1972.
3234. Comparative Anatomy and Histology of Selected Systems in Larval and Adult *Phyllophaga anxia* (Coleoptera: Scarabaeidae). R. C. Berberet and T. J. Helms. Annals of the Entomological Society of America. v65 (5):1026-1053, September, 1972.

3235. Animal Waste Utilization for Pollution Abatement. O. E. Cross, A. P. Mazurak and Leon Chesnin. Transactions of the ASAE. v16 (1):160-163, 1973.
3236. The Role of Maternal Effects in Animal Breeding: VI. Maternal Effects in Beef Cattle. Robert M. Koch. Journal of Animal Science. v35 (6):1316-1323, 1972.
3240. Lethal Effects of Radiofrequency Energy on Eggs of *Tenebrio molitor* (Coleoptera: Tenebrionidae). P. S. Rai, H. J. Ball, S. O. Nelson and L. E. Stetson. Annals of the Entomological Society of America. v65 (4):807-810, July, 1972.
3242. Breeding for Disease Resistance. W. R. Kehr, F. I. Frosheiser, R. D. Wilcoxson and D. K. Barnes. Alfalfa Science and Technology. 335-354, 1972.
3252. Grain Sorghum in the USA. W. M. Ross and J. D. Eastin. Field Crop Abstracts. v25 (2):169-174, May, 1972.
3255. Characterization of the Aminopeptidase from *Bacillus subtilis* as an Extracellular Enzyme. Fred W. Wagner, A. Chung and Lee E. Ray. Canadian Journal of Microbiology. v18 (12):1883-1891, 1972.
3256. How Do Administrators and Administrative Dietitians Perceive the Chief Dietitian? Harriet E. Carite Clark and Marie E. Knickrehm. Journal of the American Dietetic Association. v61 (6):647-651, December, 1972.
3259. Effect of Coumarin and Related Compounds of Blister Beetle Feeding in Sweetclover. H. J. Gorz, F. A. Haskins and G. R. Manglitz. Journal of Economic Entomology. v65 (6):1632-1635, December, 1972.
3262. Uptake Patterns of ¹⁵N Tagged Nitrate by Sugarbeets as Related to Soil Nitrate Level and Time. F. N. Anderson, G. A. Peterson and R. A. Olson. Journal of the American Society of Sugar Beet Technologists. v17 (1):42-48, April, 1972.
3271. Response of a Seeded Mixture of Warm-Season Prairie Grasses to Fertilization. G. W. Rehm, W. J. Schwartz. Journal of Range Management. v25 (6):452-456, November, 1972.
3277. Further Evidence for the Inability of the Kjeldahl Total Nitrogen Method to Fully Measure Indigenous Fixed Ammonium Nitrogen in Subsoils. Vernon W. Meints and Gary A. Peterson. Soil Science Proceedings. v36 (3):434-436, May-June, 1972.
3280. Development of Superior Populations of Sorghum and Their Role in Breeding Programs. C. O. Gardner. Proceedings, International Sorghum Symposium, India. 180-196, 1971.
3282. Influence of Sand on the Amount of Water-Dispersible Clay in Soil. E. M. Ashford, L. G. Shields and J. V. Drew. Soil Science Society of America Proceedings. v36 (5):848-849, September-October, 1972.

3283. A Research Note: A Method for Clean-Up of Raw Potato Extracts for Reducing Sugar Determination. Judith A. Kintner and Roy G. Arnold. Journal of Food Science. v37:631-632, 1972.
3295. Leaf, Pod, and Systemic Chlorosis Reactions in *Phaseolus vulgaris* to Halo Blight Controlled by Different Genes. Kenneth Hill, D. P. Coyne and M. L. Schuster. Journal of the American Society of Horticultural Science. v97 (4):494-498, July, 1972.
3297. Bacteriophage 06: A Lipid-Containing Virus of *Pseudomonas phaseolicola* Anne K. Vidaver, R. K. Koski and J. L. Van Etten. Journal of Virology. v11 (5):799-805, May, 1973.
3301. Rehabilitation for Homemakers with Cardiovascular Involvements: Changes in Attitudes and Ability. Lois O. Schwab and Alpha H. Jones. Journal of Home Economics. v1 (2):114-118, December, 1972.
3303. Safety and Toxicity of Dietary Organic Arsenicals Relative to Performance of Young Turkeys. T. W. Sullivan and Ali A. Al-Timimi. Poultry Science. v51 (5):1498-1501, September, 1972.
3305. Effect of a Combination of Diethylstilbestrol and Methyltestosterone and Protein Level in the Diet on Performance and Carcass Traits in an Unselected Line of Swine. L. E. Lucas, E. R. Peo, Jr. and A. J. Svajgr. Journal of Animal Science. v36 (6):1094-1098, 1973.
3307. Slowly Sedimenting Infectious Entities of Southern Bean Mosaic Virus. Myron K. Brakke. Virology. v50 (3):669-680, December, 1972.
3312. Inheritance of Resistance in *Phaseolus vulgaris* to *Uromyces phaseoli typica* Brazilian Rust Race B₁₁ and of Plant Habit. Eliane Augustin, D. P. Coyne and M. L. Schuster. Journal of American Society of Horticultural Science. v96 (4):526-529, 1972.
3315. A Review of Factors Affecting Emulsifying Characteristics of Poultry Meat. F. E. Cunningham and G. W. Froning. Poultry Science. v51 (5):1714-1720, September, 1972.
3317. Use of Earliness and Cold Tolerance in Breeding Sorghums. Paul T. Nordquist. Proceedings of American Seed Trade Association. (26):33-41, 1971.
3320. Safety and Toxicity of Dietary Organic Arsenicals Relative to Performance of Young Turkeys. 3. Nitarstone. T. W. Sullivan and A. A. Al-Timimi. Poultry Science. v51 (5):1582-1586, September, 1972.
3322. Fertilizing the Soybean Crop. R. A. Olson. Technical Report, International Atomic Energy Agency. (149):101-111, 1972.
3326. Beef Cattle Feedlot Runoff, Solids Transport and Settling Characteristics. C. B. Gilbertson, J. A. Nienaber, T. M. McCalla, J. R. Ellis and W. R. Woods. Transactions of the ASAE. v15 (6):1132-1134, 1972.
3329. Effect of Delayed Thinning on Sorghum Growth and Yield. Max D. Clegg and Jerry W. Maranville. Agronomy Journal. v64:841-842, November-December, 1972.

3330. Safety and Toxicity of Dietary Organic Arsenicals Relative to Performance of Young Turkeys. 4. Roxarsone. T. W. Sullivan and Ali. A. Al-Timimi. Poultry Science. v51 (5):1641-1644, September, 1972.
3331. Mitochondrial DNA Synthesis during Fungal Spore Germination. Larry D. Dunkle, James L. Van Etten and Robert M. Brambl. Arch. Mikrobiol. 85, 225-232, 1972.
3332. Students Prefer a la Carte Systems for Cost, Quality and Flexibility. Bennett D. Chilson and Marie E. Knickrehm. College and University Business. 56, 60.
3333. A Resistance Model to Predict Evapotranspiration and Its Application to a Sugar Beet Field. K. W. Brown and Norman J. Rosenberg. Agronomy Journal. v65:341-347, May-June, 1973.
3336. On the Pressure Chamber Technique for Estimating Leaf Water Potential in Sorghum. A. Blum, C. Y. Sullivan and J. D. Eastin. Agronomy Journal. v65:337-338, March-April, 1973.
3341. Electric Shears for Plot Harvesting. L. A. Daigger. Journal of Range Management. v25 (5):404-405, September, 1972.
3343. Autoxidation of Crystallized and Crude Turkey Meat Myoglobin. G. W. Froning. Poultry Science. v51 (6):1940-1943, November, 1972
3345. Pathogenesis of Mycoplasmal Pneumonia in Swine. C. W. Livingston, Jr., E. L. Stair, N. R. Underdahl and C. A. Mebus American Journal of Veterinary Research v33 (11):2249-2258, November, 1972.
3347. Effects of Mass Selection and Irradiation in Corn Measured by Random S₁ Lines and Their Testcrosses. R. E. Harris, C. O. Gardner and W. A. Compton. Crop Science. v12:594-598, September-October, 1972.
3348. Isolation Unit Used in Studies on Neonatal Calf Diarrhea. C. A. Mebus, N. R. Underdahl and M. J. Twiehaus. American Journal of Veterinary Research. v33 (11):2335-2340, November, 1972.
3349. Cattle Grub Insecticide Efficacy and Effects on Weight-Gain Performance on Feeder Calves in Nebraska. J. B. Campbell, Walter Woods, A. F. Hagen and E. C. Howe. Journal of Economic Entomology v66 (2):429-432, April, 1973.
3351. Prophylactic Efficacy of Nifursol Against Different Levels of Exposure to Histomoniasis in Turkeys 4 to 9 Weeks of Age. T. W. Sullivan, R. J. Mitchell and O. D. Grace. Poultry Science. v51 (6):1956-1959, 1972.
3352. Effect of Slotted Floors on Air-Flow Characteristics in a Model Swine Confinement Building. D. D. Schulte, J. A. DeShazer and C. N. Ifeadi. Transactions of the ASAE. v15 (5):947-950, 1972.
3353. Identification of Experiences in Applied Biological Science and Agribusiness of Seventh Grade Students. Roy D. Dillon and Glenn Z. Stevens. Vocational Guidance Quarterly. v13 (2):8-16, July, 1972.

3356. Serology, Physical Properties and Purification of Unaggregated Infectious Maize Dwarf Mosaic Virus. Willem G. Langenberg. *Phytopathology*. v63 (1):149-154, January, 1973.
3358. Encasing Undisturbed Soil Cores in Plastic. L. N. Mielke. *Soil Science Society of America Proceedings*. v37 (2):325-326, March-April, 1973.
3359. Broadcast or Banded Chloramben with Tillage Variables in Soybeans. R. S. Moomaw and L. R. Robison. *Weed Science*. v20 (5):502-506, September, 1972.
3360. Utilization of Beef and Pork Skin Hydrolyzates as a Binder or Extender in Sausage Emulsions. L. D. Satterlee, N. Y. Zachariah and Ezra Levin. *Journal of Food Science*. v38:268-270, 1973.
3362. High pH-Ammonia Agar Immunodiffusion for Plant Viruses. Willem G. Langenberg and Ellen M. Ball. *Phytopathology*. v62 (10):1214-1217, October, 1972.
3363. Operational Characteristics of Meat Animals. Part I — Swine. N. C. Teter, J. A. DeShazer and T. L. Thompson. *Transactions of the ASAE*. v16 (1):157-159, 1973.
3364. Degradation of 2,4-D and Atrazine at Three Soil Depths in the Field. T. L. Lavy, F. W. Roeth and C. R. Fenster. *Journal of Environmental Quality*. v2 (1):132-137, January-March, 1973.
3366. The Effect of Age, Nutritional Factors, and Gonadal Development on the Mating Behavior of the Face Fly, *Musca Autumnalis*. M. F. B. Chaudhury and Harold J. Ball. *Journal of Insect Physiology*. v19:57-64, 1973.
3367. Isolation and Characterization of Oat Blue Dwarf Virus Ribonucleic Acid. D. R. Pring, R. J. Zeyen and E. E. Bantari. *Phytopathology*. v63 (3):393-396, March, 1973.
3372. Chemistry of Thiamine Degradation: 4-Methyl-5-(*B*-Hydroxyethyl) Thiazole from Thermally Degraded Thiamine. Basant K. Dwivedi, Roy G. Arnold and Leonard M. Libbey. *Journal of Food Science*. v37:689-692, 1972.
3374. The Effect of pH and Certain Additives on Heat Denaturation of Turkey Meat Myoglobin I. Model System. D. M. Janky and G. W. Froning. *Poultry Science*. v52:152-159, 1973.
3375. Insect-Control Possibilities of Electromagnetic Energy. S. O. Nelson. *Cereal Science Today*. v17 (12):377-378 and 387, December, 1972.
3376. Genetic and Phenotypic Relations Associated with Preweaning and Postweaning Growth of Hereford Bulls and Heifers. R. M. Koch, L. V. Cundiff, K. E. Gregory and G. E. Dickerson. *Journal of Animal Science*. v36 (2):235-239, 1973.
3378. Weed Control of Soybeans with Postemergence-Directed Herbicides. R. G. Wilson, Jr., and O. C. Burnside. *Journal of The Weed Science Society of America*. v21 (1):81-85, January, 1973.

3379. Epoxy Film Separable from Glass Surfaces for Selective Light and Electron Microscopy of Tissue and *in situ* Grown Cells. Willem G. Langenberg, Helen F. Schroeder, Ardyce B. Welch and Gilbert E. Cook. Stain Technology. v47 (6):303-308, 1972.
3383. Field Trials to Control the European Corn Borer with Insecticides. Richard N. Wedderburn, J. D. Munson and J. L. Wedberg. Journal of Economic Entomology. v66 (1):253-254, February, 1973.
3384. Physiologic Maturity in Grain Sorghum. Jerry D. Eastin, Joe H. Hultquist and C. Y. Sullivan. Crop Science. v13:175-178, March-April, 1973.
3385. Registration of Three Sorghum Germplasm Random-Mating Populations. P. T. Nordquist, O. J. Webster, C. O. Gardner and W. M. Ross. Crop Science. v13:132, January-February, 1973.
3389. Chemistry of Thiamine Degradation in Food Products and Model Systems: A Review. Basant K. Dwivedi and Roy G. Arnold. Journal of Agricultural and Food Chemistry. v21 (1):54-60, January-February, 1973.
3391. Photic Entrainment of Circadian Activity Rhythms by Direct Brain Illumination in the Cockroach *Blaberus Craniifer*. Harold J. Ball. Journal of Insect Physiology. v18:2449-2455, 1972.
3392. Heat-Induced Changes in Extractability of Beef Muscle Collagen. Pauline C. Paul, Suzanne E. McCrae and Linda M. Hofferber. Journal of Food Science. v38:66-68, 1973.
3396. Improving the Quality of Mechanically Deboned Fowl Meat by Centrifugation. G. W. Froning and Faye Johnson. Journal of Food Science. v38:279-281, 1973.
3397. Comparison of the Efficiencies of Selection Indices for Three Traits in Two Variety Crosses of Corn. Subandi, W. A. Compton and L. T. Empig. Crop Science. v13:184-186, March-April, 1973.
3398. Seed Dormancy and Germination of Indiangrass as Affected by Light, Chilling, and Certain Chemical Treatments. Jams G. Emal and E. C. Conard. Agronomy Journal. v65:383-386, May-June, 1973.
3399. Protein Content of Winter Wheat Grain as Related to Soil and Climatic Factors in the Semiarid Central Great Plains. D. E. Smika and B. W. Greb. Journal of Agronomy. v65:433-436, May-June, 1973.
3400. Nitrogen Losses in Surface Runoff from Agricultural Watersheds on Missouri Valley Loess. G. E. Schuman, R. E. Burwell, R. F. Piast and R. G. Spomer. Journal of Environmental Quality. v2 (2):299-302, 1973.
3401. Application of Low Dose Irradiation to a Fresh Bread System for Space Flights. T. E. Hartung, L. B. Bullerman, R. G. Arnold and N. D. Heidelbaugh. Journal of Food Science. v38:129-132, 1973.

3403. Measurements of Aerosol Size Distributions and Vertical Fluxes of Aerosols on Land Subject to Wind Erosion. Dale A. Gillette, Irving H. Blifford, Jr., and Charles R. Fenster. Journal of Applied Meteorology. v11 (6):977-987, September, 1972.
3404. Yield and Protein Responses to Nitrogen Fertilizer of Two Winter Wheat Varieties Differing in Inherent Protein Content of Their Grain. V. A. Johnson, A. F. Dreier and P. H. Grabouski. Agronomy Journal. v65:259-263, March-April, 1973.
3405. A Computer Program for Short-Circuited Waveguide Dielectric-Properties Measurements on High- or low-Loss Materials. S. O. Nelson, C. W. Schlaphoff and L. E. Stetson. Journal of Microwave Power. v8 (1):13-22, 1973.
3409. Control of the Army Cutworm of Alfalfa in Nebraska. G. R. Manglitz, J. M. Schalk, L. W. Andersen and K. P. Pruess. Journal of Economic Entomology. v66 (1):299, February, 1973.
3410. Inhibitory Effect of Yogurt on Ehrlich Ascites Tumor-Cell Proliferation. G. V. Reddy, K. M. Shahani and M. R. Banerjee. Journal of the National Cancer Institute. v50 (3):815-818, March, 1973.
3415. Possibilities for Controlling Stored-Grain Insects with RF Energy. S. O. Nelson. Journal of Microwave Power. v7 (3):231-239, 1972.
3417. Nitrogen Fixation by *Klebsiella* Grown in the Presence of Oxygen. Robert Klucas. Canadian Journal of Microbiology. v18 (12):1845-1850, 1972.
3418. Conventional and Microwave Heating of Beef: Use of Plastic Wrap. Diane Ferger Ruyack and Pauline C. Paul. Home Economics Research Journal. v1 (2):98-103, December, 1972.
3420. Neonatal Calf Diarrhea: Propagation, Attenuation, and Characteristics of a Coronavirus-like Agent. C. A. Mebus, E. L. Stair, M. B. Rhodes and M. J. Twiehaus. American Journal of Veterinary Research. v34 (2):145-150, February, 1973.
3424. Genomic Masking in Mixed Infections with Brome Mosaic and Barley Stripe Mosaic Viruses. Jean F. Peterson and Myron K. Brakke. Virology. v51 (1):174-182, 1973.
3425. Frequency Dependence of Energy Absorption by Insects and Grain in Electric Fields. S. O. Nelson and L. F. Charity. Transactions of the ASAE. v15 (6):1099-1102, 1972.
3426. Some Minor Volatile Components from Thermally Degraded Thiamine. Basant K. Dwivedi, Roy G. Arnold and Leonard M. Libbey. Journal of Food Science. v38:450-452, 1973.
3429. A System for Measuring Dielectric Properties at Frequencies from 8.2 to 12.4 GHz. Stuart O. Nelson. Transactions of the ASAE. v15 (6):1094-1098, 1972.

3430. An Analysis of Reproductive Traits in Beef Cattle. D. D. Dearborn, R. M. Koch, L. V. Cundiff, K. E. Gregory and G. E. Dickerson. *Journal of Animal Science*.
3431. Specific Heat and Thermal Conductivity of Sorghum. D. K. Sharma and T. L. Thompson. *Transactions of the ASAE*. v16 (1):114-117, 1973.
3432. Immunochemical Studies on the Milk Lysozymes. R. R. Eitenmiller, Beverly A. Friend, K. M. Shahani and Ellen Ball. *Biochim. Biophys. Acta*.
3433. Cell Culture Studies of a Neonatal Calf Diarrhea Virus. Ardyce B. Welch and M. J. Twiehaus. *Canadian Journal of Comparative Medicine*.
3434. Physicochemical Characterization of a Neonatal Calf Diarrhea Virus. Ardyce B. Welch and T. L. Thompson. *Canadian Journal of Comparative Medicine*.
3435. Ammonia Nitrogen Losses From Newly Plowed Native Sods. M. Hooker, G. A. Peterson and D. H. Sander. *Soil Science Society of America*.
3436. Accelerated Pork Processing. VII. Freeze-Dried Pork Chops. L. C. Hinnergardt, R. W. Mandigo and J. M. Tuomy. *Journal of Animal Science*.
3437. The Effect of Pre-Chill Pork on Flaked, Formed, and Sectioned Pork Products. K. R. Hansen and R. W. Mandigo. *Journal of Animal Science*.
3438. Accelerated Pork Processing: Prototype Methods and Results. T. L. Thompson and R. W. Mandigo. *Transactions of the ASAE*.
3439. Chicken Transferrin: High Levels of Chickens with Reticuloendothelial Virus Disease. A. Torres-Medina, H. C. Mussman, M. B. Rhodes and M. J. Twiehaus. *Poultry Science*.
3440. The Effect of Grinding Versus Flaking on Porcine Muscle. M. S. Chesney and R. W. Mandigo. *Journal of Animal Science*.
3441. Comparisons of Dry Breakfast Cereals as Protein Resources: Human Biological Assay at Equal Intakes of Cereal. Constance Kies and Hazel Metz Fox. *Cereal Chemistry*. v50 (2):233-239, March-April, 1973.
3442. Comparison of Urea and Diammonium Citrate as Sources of Nonspecific Nitrogen for Human Adults. Constance Kies and Hazel M. Fox. *Journal of Nutrition*. v103 (5):664-669, May, 1973.
3443. Immediate Post Mortem Effects on the Physical Properties of Porcine Muscle. Kenneth Meier, T. L. Thompson and Roger Mandigo. *Transactions of the ASAE*.
3444. Nature and Cause of Yellow Film Occurring on Dairy Equipment. R. B. Maxcy. *Journal of Dairy Science*. v56 (2):164-167, February, 1973.
3445. Calf Diarrhea of Viral Etiology. Charles A. Mebus, E. L. Stair, M. B. Rhodes, N. R. Underdahl and M. J. Twiehaus. *Symposium on Physiology and Digestive Pathology of the Newborn Calf*.

3446. Genetic Control of Reaction to Common Blight Bacterium in Bean (*Phaseolus vulgaris*) as Influenced by Plant Age and Bacterial Multiplication. D. P. Coyne, M. L. Schuster and K. Hill. The Journal of the American Society for Horticultural Science. v98 (1):94-99, January, 1973.
3447. Subjective Evaluation of Teat Canal Anatomy. Robert D. Appleman. Journal of Dairy Science.
3448. Accelerated Pork Processing. VI. Fresh-Frozen Pork Chops. L. C. Hinndergardt, R. W. Mandigo and J. M. Tuomy. Journal of Animal Science.
3449. Comparison of Expressed Goals and Simulated Behavior by Food Purchasers. Laura Darnell, Constance Kies and Orian Captain. Journal of Nutrition Education.
3450. Effect of Skin Content on Emulsifying and Color Characteristics of Mechanically Deboned Chicken Back Meat. G. W. Froning, L. D. Satterlee and Faye Johnson. Poultry Science.
3451. Effect of Chilling in the Presence of Polyphosphates on the Characteristics of Mechanically Deboned Fowl Meat. G. W. Froning. Poultry Science.
3452. Differential Response of Maize (*Zea Mays L.*) to Mass Selection in Diverse Selection Environments. Fernando Arboleda-Rivera and William A. Compton. Crop Science.
3453. Educational Experiences Given to Newly Blinded Homemakers by Rehabilitation Teachers of the Blind. Carolyn A. Rainey and Lois O. Schwab. The New Outlook for the Blind.
3454. Specialization and Flexibility Considerations in a Polyperiod Firm Investment Model. Glenn A. Helmers, Gary W. Lentz and James G. Kendrick. American Journal of Agricultural Economics.
3455. Gain, Feed Conversion and Carcass Traits of Swine Fed Under Two Nutritional Regimes. P. J. Cunningham, T. E. Socha, E. R. Peo, Jr. and R. W. Mandigo. Journal of Animal Science.
3456. Soybean Water Use Efficiency and Turbulent Transport in the Shelter of a Slat-Fence Windbreak. David R. Miller, Norman J. Rosenberg and Walter T. Bagley. Agricultural Meteorology.
3457. Some Measurements of Urinary Pantothenic Acid Excretions of Alcoholic Patients. Helen G. Tao and Hazel M. Fox. Journal of Clinical Nutrition.
3458. Sequential Evaluation of the Effects of Methionine Supplementation of Legume Based Diets: Chemical Evaluation and General Methods. Matin Fatma, Constance Kies and Paul Mattern. Home Economics Research Journal.

3459. Sequential Evaluation of the Effect of Methionine Supplementation of Legume Based Diets: Sociological Evaluation. Matin Fatma, Constance Kies and Hazel M. Fox. Home Economics Research Journal.
3460. Sequential Evaluation of the Effect of Methionine Supplementation of Legume Based Diets: Human Biological Evaluation. Matin Fatma, Constance Kies and Hazel M. Fox. Home Economics Research.
3461. Protein/Pantothenic Acid Interrelationships in Growing Rats. Helen Tao and Hazel M. Fox. Journal of Nutrition.
3462. Automated Total Nitrogen Analysis of Soil and Plant Samples. G. E. Schuman, M. A. Stanley and D. Knudsen. Soil Science Society of America Proceedings. v37:480-481, 1973.
3463. Early Root and Shoot Development of Nine Plant Species. L. L. Evetts and O. C. Burnside. Weed Science.
3464. Solids Trap for Beef Cattle Feedlot Runoff. N. P. Swanson and L. N. Mielke. Transactions of the ASAE.
3465. Influence of Agricultural Practices on Water Quality in Nebraska. R. A. Olson, Edwin C. Seim and John Muir. American Water Resources Association Bulletin. v9 (2):301-311, April, 1973.
3466. Agricultural Cellulosic Wastes for Feed. Terry Klopfenstein and Walter Koers. Proceedings of the Symposium of American Chemical Society.
3467. Efficacy of Iprnidazole in Feed and Water Against Histomoniasis in Turkeys 4 to 10 Weeks of Age. T. W. Sullivan, O. D. Grace and R. J. Mitchell. Poultry Science.
3468. Effects of Reversing Airflow in a Crossflow Grain Dryer. M. R. Paulsen and T. L. Thompson. Transactions of the ASAE.
3469. Some Semi-Symbiotic Associations. Robert Klucas. Presented at the National Plant Physiology Meeting.
3470. A Drying Analysis of Grain Sorghum. R. Paulsen and T. L. Thompson. Transactions of the ASAE.
3471. Utilization of High Protein Tissue Powders as a Binder/Extender in Meat Emulsions. L. D. Satterlee, Bette Free and Ezra Levin. Journal of Food Science. v38:306-309, 1973.
3472. Effect of Frozen Storage on Flavor Stability of Mechanically Deboned Chicken Backs With and Without Kidneys. D. G. Cornish, G. W. Froning and R. G. Arnold. Journal of Food Science.
3473. Microscopic Observations of Germination and Septum Formation in Pycnidiospores of *Botryodiplodia theobromae*. William P. Wergin, Larry D. Dunkle, James L. Van Etten, Grant St. Julian and Lee A. Bulla, Jr. Developmental Biology. v32 (1):1-14, May, 1973.
3474. Effect of Light Treatment, Buffer, Fixative, Dehydrant, and Embedding Plastic on the Preservation of Tobacco Mosaic Virus Inclusions. W. G. Langenberg and H. F. Schroeder. Phytopathology.

3475. Activity Ratios for Farm Machinery Operations Analysis. Kenneth Von Bargen and M. D. Cunney. Transactions of the ASAE.
3476. Quality of Water Discharged from a Diversified, Agricultural Watershed in Southwestern Iowa. R. E. Burwell, G. E. Schuman, R. F. Piest, R. G. Spomer and T. M. McCalla. Water Resources Research.
3477. Chemical Characteristics of a Feedlot Soil Profile and Manure Mounds. G. E. Schuman and T. M. McCalla. Journal of Environmental Quality.
3478. The Effect of Feeding Unsaturated Fats as Influenced by the Presence or Absence of Rumen Protozoa. I. Serum Lipid Composition. Edgar Clemens, Walter Woods and Vincent Arthaud. Journal of Animal Science.
3479. The Effect of Feeding Unsaturated Fats as Influenced by the Presence or Absence of Rumen Protozoa. II. Carcass Lipid Composition. Edgar Clemens, Walter Woods and Vincent Arthaud. Journal of Animal Science.
3480. Effect of Methionine and Ammonium Sulfate Upon Performance of Ruminants Fed High Corn Rations. K. K. Bolsen, Walter Woods and Terry Klopfenstein. Journal of Animal Science.
3481. Competition of Annual Weeds and Sweet Spanish Onions. G. A. Wicks, D. N. Johnston, D. S. Nuland and E. J. Kinbacher. Weed Science.
3482. Genetic Studies of Induced Mutants in *Melilotus Alba*. III. Folded Leaflet, Elongated Stem, and Short-Petiole Dwarf. R. R. Ronnenkamp, F. A. Haskins and H. J. Gorz. Crop Science.
3483. Effect of Light, pH and Buffer Strength on the Autoxidation of Porcine, Ovine and Bovine Myoglobins at Freezing Temperatures. N. W. Zachariah and L. D. Satterlee. Journal of Food Science. v38:418-420, 1973.
3484. A Survey of Student and Faculty Attitudes toward Education in the College of Agriculture, University of Nebraska. Vernon Williams and Roy Dillon. National Association of Colleges and Teachers of Agriculture.
3485. Pathology of Neonatal Calf Diarrhea Induced by a Coronavirus-Like Agent. C. A. Mebus, E. L. Stair, M. B. Rhodes and M. J. Twiehaus. Veterinary Pathology.
3486. Comparative Virulence of *Xanthomonas phaseoli* Strains from Uganda, Colombia, and Nebraska. M. L. Schuster and D. P. Coyne. Plant Disease Reporter.
3487. Effect of Amino Acids on Non-Protein Nitrogen Utilization by G-F Swine. P. D. Platter, E. R. Peo, Jr., P. E. Vipperman, Jr. and P. J. Cunningham. Journal of Animal Science.
3488. Photic Entrainment of Circadian Rhythms by Illumination of Implanted Brain Tissues in the Cockroach *Blaberus craniifer*. Harold J. Ball and M. F. B. Chaudhury. Journal of Insect Physiology. v19:823-830, 1973.

3489. Utilization of 1, 3-Butanediol and Nonspecific Nitrogen in Human Adults. Constance Kies, R. B. Tobin, H. M. Fox and M. A. Mehlman. Journal of Nutrition.
3490. Effect of High Lysine Corn vs a Corn Soybean Meal Diet on Age at Puberty in Gilts. P. J. Cunningham, C. H. Naber and Dwane R. Zimmerman. Journal of Animal Science.
3491. Anthelmintic Activity of Levamisole Against *Ascaris*, *Trichuris*, and *Metastrongylus* infection in Swine. Donald L. Ferguson. The Cornell Veterinarian.
3492. Phaseolus Germplasm Tolerant to Common Blight Bacterium (*Xanthomonas Phaseoli*). Dermot P. Coyne and M. L. Schuster. Plant Disease Reporter. v57 (2):111-114, February, 1973.
3493. Some Effects of Herbicides or Mowing on Musk Thistle Seed Production. John L. Hatting and M. K. McCarty. Weed Science.
3494. Maintenance Levels of Protein and Energy and the Effect of Egg Production Upon Feed Consumption of Laying Hens. Earl W. Gleaves, Harlan Hochstetler and Hector Benitez. Poultry Science.
3495. Broad Basin Terraces for Sloping Cattle Feedlots. N. P. Swanson, J. C. Lorimor and L. N. Mielke. Transactions of the ASAE.
3496. Sampling of Liquid and Nonfluid Wastes. Norris P. Swanson and Conrad B. Gilbertson. Transactions of the ASAE.
3497. Effects of Patulin and Method of Application on Growth Stages of Wheat. J. R. Ellis and T. M. McCalla. Applied Microbiology. v25 (4):562-566, April, 1973.
3498. Chelated Trace Minerals for G-F Swine. A. A. Owen, E. R. Peo, Jr., P. J. Cunningham and B. D. Moser. Journal of Animal Science.
3499. Condition of Coliform Organisms Influencing Recovery of Subcultures on Selective Media. R. B. Maxcy. Journal of Applied Microbiology.
3500. Effect of EDTA on Utilization of Dietary Zinc by G-F Swine. A. A. Owen, E. R. Peo, Jr., P. J. Cunningham and B. D. Moser. Journal of Animal Science.
3501. Removal of Glucose from Eggs: A Review. Arun Kilara and K. M. Shahani. Journal of Food Science.
3502. An Improved Model for Simulating Herringbone and Side-Opening Milking Parlor Operations. C. F. Micke and R. D. Appleman. Journal of Dairy Science.
3503. Detection of Carbonyl Sulfide and Other Gases Emanating from Beef Manure. L. F. Elliott and T. S. Travis. Soil Science Society of America.
3504. Differential Effects of Actinomycin D and Cycloheximide on the Replication of Cowpea Mosaic Virus and Bean Pod Mottle Virus in a Common Host. George D. McLean and Joseph S. Semancik. Virology.
3505. *In Vitro* Protein Polymerization and Nucleoprotein Reconstitution of Tobacco Rattle Virus. J. S. Semancik and T. J. Morris. Virology.

3506. Homologous Interference Between the Components of Tobacco Rattle Virus. J. S. Semancik and T. J. Morris. *Virology*.
3507. The Effects of Continuous Corn, Manuring, and Nitrogen Fertilization on Yield and Protein Content of the Grain and on the Soil Nitrogen Content. F. N. Anderson and G. A. Peterson. *Agronomy Journal*.
3508. Slick Spot Soils in Southeastern Nebraska - Patterns and Genesis. D. T. Lewis and J. V. Drew. *Soil Science Society of America Proceedings*.
3509. A Cabinet with Controlled Humidity to Bring Cereal Samples to Constant Moisture. P. J. Mattern and J. B. Bishop. *Cereal Science Today*. v18 (1):8-10, January, 1973.
3510. Home Economists in Rehabilitation Centers and Services: Utilization and Demand. Mrs. Cecelia Sue Knoll and Lois O. Schwab. *Home Economics Research Journal*.
3511. Control of Bagworm with *Bacillus thuringiensis*. E. J. Bishop, T. J. Helms and K. A. Ludwig. *Journal of Economic Entomology*. v66 (3):675-676.
3512. *Haemonchus contortus*: Enzymes III Glutamate Dehydrogenase. Marvin B. Rhodes and Donald L. Ferguson. *Experimental Parasitology*.
3513. Immunity to Calf Neonatal Diarrhea Virus. C. A. Mebus, R. G. White, E. P. Bass and M. J. Twiehaus. *American Journal of Veterinary Research*.
3514. Analyzing Physical and Chemical Properties of Solid Wastes from Livestock and Poultry. C. B. Gilbertson, T. M. McCalla, and A. T. Sobel. *Transactions of the ASAE*.
3515. Insect Control Studies with Microwaves and Other Radiofrequency Energy. Stuart O. Nelson. *Bulletin of the Entomological Society of America*.
3516. Effect of Dietary Calcium and Phosphorus Level Upon Calcium, Phosphorus and Nitrogen Balance in Swine. P. E. Vipperman, Jr., E. R. Peo, Jr. and P. J. Cunningham. *Journal of Animal Science*.
3517. Microwave Dielectric Properties of Grain and Seed. Stuart O. Nelson. *Transactions of the ASAE*.
3518. Barley Stripe Mosaic Virus Infection of Corn and the "Aberrant Ratio" Genetic Effect. D. R. Pring. *Phytopathology*.
3519. Beef Cattle Feedlot Runoff - Physical Properties. C. B. Gilbertson and J. A. Nienaber. *Transactions of the ASAE*.
3520. Every Other Furrow Irrigation of Corn. Paul E. Fischbach and H. R. Mulliner. *American Society of Agricultural Engineers*.
3521. Soil Moisture Extraction and Irrigation Design Requirements for Corn. Paul E. Fischbach and B. R. Somerhalder. *American Society of Agricultural Engineers*.

3522. Effects of Heterosis on Reproduction in Hereford, Angus and Short-horn Cattle. Larry V. Cundiff, Keith E. Gregory and Robert M. Koch. Journal of Animal Science.
3523. Leaf-dip Serology for the Determination of Strain Relationships of Elongated Plant Viruses. Willem G. Langenberg. Phytopathology.
3524. Influence of Fertilizer Practices on the Quality of Nebraska Waters. John Muir, Edwin C. Seim and R. A. Olson. Journal of Environmental Quality.
3525. Winter Wheat Response to Postemergence Herbicides. L. R. Robison and C. R. Fenster. Agronomy Journal.
3526. Adenosine as a Feeding Stimulant for the Sweetclover Weevil. G. L. Beland, F. A. Haskins, G. R. Manglitz and H. J. Gorz. Annals, Entomological Society of America.
3527. Convective Radiative and Evaporative Heat Losses of White Leghorn Layers as Affected by Bird Density per Cage. Larry L. Olson, James A. DeShazer and F. B. Mather. American Society of Agricultural Engineers.
3528. A Comparison of Glutaraldehyde and Chromate Fixation of Wheat Leaf Cells Infected with Hordeum Mosaic Virus. W. G. Langenberg. Journal of Ultrastructure Research.
3529. Soybean Herbicide Trials in Nebraska in 1972. R. S. Moomaw and O. C. Burnside. North Central Weed Control Conference Research Report.
3530. Newer Knowledge of Viral Agents in Calf Scours. C. A. Mebus. Proceedings of the Fifth Annual Convention of the American Association of Bovine Practitioners.
3531. Influence of Tissue Drying on *o*-Hydroxycinnamic Acid Content in Sweetclover F. A. Haskins and H. J. Gorz. Crop Science.
3532. Dietary Chloride Requirement of Starting Turkeys. J. J. Kubicek and T. W. Sullivan. Poultry Science.
3533. Feedlot Waste Runoff, Its Influence on Soil Cation Status and the Survival of Windbreak Trees. David F. Van Haverbeke and Leon Chesnin. Journal of Soil and Water Conservation.
3534. Prophylactic Efficacy of Graded Levels of Iprnidazole Against Different Levels of Exposure to Histomoniasis in Turkeys 5 to 12 weeks Old. T. W. Sullivan, O. D. Grace, T. E. Bowen and D. P. Holder. Poultry Science.
3535. Response of Subirrigated Hay Meadows to the Application of Nitrogen, Phosphorus, and Sulfur. G. W. Rehm, W. J. Moline, R. C. Sorensen and D. F. Burzlaff. Agronomy Journal.
3536. Occurrence and Spread of an Undescribed Species of *Corynebacterium* Pathogenic on Corn in the Western Corn Belt. D. S. Wysong, Anne K. Vidaver, H. Stevens, and D. Stenberg. Plant Disease Reporter. v57 (4):291-294, April, 1973.

3537. Accelerated Pork Processing. VI Fresh-Frozen Pork Chops. L. C. Hinnergardt, R. W. Mandigo and J. M. Tuomy. Journal of Food Science.
3538. Accelerated Pork Processing. VII. Freeze-Dried Pork Chops. L. C. Hinnergardt, R. W. Mandigo and J. M. Tuomy. Journal of Food Science.
3539. Protein Nutrition Value of Opaque-2 Corn for Adolescent Boys. Mary Korslund, Constance Kies and Hazel Metz Fox. Journal of Nutrition.
3540. Comparison of the Protein Nutritional Value of TVP, Methionine-enriched TVP and Beef for Adolescent Boys. Mary Korslund, Constance Kies and Hazel M. Fox. Journal of Food Science.
3541. Efficiency of Grain Dry Matter Accumulation in Grain Sorghum. J. D. Eastin. Proceedings of 1972 American Seed Trade Association Meeting. 27th Annual Corn and Sorghum Research Conference.
3542. Genetic Studies in an Exotic Population of Corn (*Zea mays* L.) Grown Under Two Plant Densities. I. Estimates of Genetic Parameters. Subandi and W. A. Compton. Theoretical and Applied Genetics.
3543. Genetics Studies in An Exotic Population of Corn (*Zea mays* L.) Grown Under Two Plant Densities. II. Choice of a Density Environment for Selection. Subandi and W. A. Compton. Theoretical and Applied Genetics.
3544. Selection Effects in Beef Cattle. I. Selection Intensity and Generation Interval. Robert M. Koch, Keith E. Gregory and Larry V. Cundiff. Journal of Animal Science.
3545. Selection Effects in Beef Cattle II. Selection Practiced and Response. Robert M. Koch, Keith E. Gregory and Larry V. Cundiff. Journal of Animal Science.
3546. Mycotoxin Producing Potential of Fungi Isolated from Flour and Bread. L. B. Bullerman and T. E. Hartung. Applied Microbiology.
3547. A Modification of the Gardner-Eberhart (1966) Model for Evaluating Cycles of Selection. J. J. Hammond and C. O. Gardner. Crop Science.
3548. Fatty Acid Composition of Bulls and Steers as Influenced by Age and Dietary Energy Level. Edgar Clemens, Vincent Arthaud, Roger Mandigo and Walter Woods. Journal of Animal Science.
3549. How Can Clothing Be A Habitating Tool? Audrey Newton. Journal of Home Economics.
3550. Evapotranspiration by Subirrigated Alfalfa and Pasture in the East Central Great Plains. Blaine L. Blad and Norman J. Rosenberg. Agronomy Journal.
3551. Multicomponent Properties of Barley Stripe Mosaic Virus. A. O. Jackson and M. K. Brakke. Virology.
3552. Establishment of Alfalfa in Irrigated Corn. P. T. Nordquist and G. A. Wicks. Agronomy Journal.

3553. Characteristics of Deoxyribonucleic Acid Polymerase Isolated from Spores of *Rhizopus stolonifer*. Cheng-Shung Gong, Larry D. Dunkle and James L. Van Etten. *Biochimica et Biophysica Acta*.
3554. Satellite Imagery for Assessing Range Fire Damage in the Sandhills of Nebraska. Paul M. Seevers, Peter N. Jensen and James V. Drew. *Journal of Range Management*.
3555. Physiological Aspects and Microscopical Observations of *Rhizopus stolonifer* Spore Germination. J. S. Van Etten, Grant St. Julian and Lee A. Bulla. *Bacteriology*.
3556. Seedling Growth of *Sorghum Bicolor* (L.) Moench in Clay-Sand Mixtures at Various Compactions and Water Contents. Delroy L. Hemsath and Andrew P. Mazurak. *Soil Science Society of America Proceedings*.
3557. Root Distribution and Propagation of Common Milkweed. L. L. Evetts and O. C. Burnside. *Weed Research Journal*.
3558. Dielectric Properties of Materials for Microwave Processing—Tabulated. W. R. Tinga and S. O. Nelson. *Journal of Microwave Power*. v8 (1):23-65, 1973.
3559. Relationships of the Milking System to the Adequacy of Milking. R. D. Appleman and C. F. Micke. *Journal of Dairy Science*.
3560. Reducing Herbicide Injury to Sorghum with Crop Protectants. R. F. Spotanski and O. C. Burnside. *Weed Science Journal*.
3561. Effects of Mowing on Three Species of Wild Flowers. S. S. Salac, J. F. Hesse and J. O. Young. *Journal of the American Society for Horticultural Science*.
3562. Hay! The Future's High Protein Snack? L. D. Satterlee, J. G. Kendrick and Kathy J. Liska. *Snack Food*. 46-47, April, 1973.
3563. Mass Spectrum of an Ornithine-containing Lipid from *Thiobacillus Thiooxidans*. Herman W. Knoche and Jessup M. Shively. *Lipids*.
3564. Toxin from *Fusarium Moniliforme*: Effects on Plants and Animals. R. J. Cole, J. W. Kirksey, H. G. Cutler, B. L. Doupnik and J. C. Peckham. *Science*. v179:1324-1325, March, 1973.
3565. Effect of Genetic Sampling Technique on Variation Within Populations Derived by Crossing, Selfing or Random Mating Other Populations. J. J. Hammond and C. O. Gardner. *Crop Science*.
3566. Operational Characteristics of Meat Animals — Part III Broilers. N. C. Teter, J. A. DeShazer and T. L. Thompson. *Transactions of the ASAE*.
3567. Characterization of a Segmented Double-Helical RNA from Bacteriophage Ø6. J. S. Semancik, A. K. Vidaver and J. L. Van Etten. *Journal of Molecular Biology*.
3568. Herbicides: Mode of Action. I. Photosynthetic Inhibitors. Lowell Klepper. *Science*.

3569. Herbicides: Mode of Action II. Conversion of Herbicides into Photosynthetic Inhibitors. Lowell Klepper. Science.
3570. Endoplasmic Reticulum-derived Pinwheels in Wheat Infected with Wheat Spindle Streak Mosaic Virus. Willem G. Langenberg and Helen F. Schroeder. Virology.
3571. Registration of Trio Oats. F. A. Coffman, E. G. Heyne and John W. Schmidt. Crop Science.
3572. Photosynthesis and Resistance to Water Loss as Related to Maturity Stage in Grain Sorghum *Sorghum bicolor* (L.) Moench. Joe H. Hultquist. Proceedings of Grain Sorghum Research and Utilization Conference.
3573. Use of Behavioral Objectives to Teach Soil Morphology, Classification, and Survey. David T. Lewis. Journal of Agronomic Education.
3574. A Ten-Year Study of Potential Western Corn Rootworm Resistance to Diazinon and Phorate in Nebraska. Harold J. Ball. Journal of Economic Entomology.
3575. Registration of Belinda Winter Wheat Germplasm. J. W. Schmidt, V. A. Johnson, P. J. Mattern. Crop Science.
3576. Registration of Centurk Wheat. J. W. Schmidt, V. A. Johnson, P. J. Mattern, A. F. Dreier. Crop Science.
3577. Relationship of Bromegrass Seed Midge Infestation and the Length of Palea of Smooth Bromegrass. E. L. Neiman and G. R. Manglitz. Journal of Economic Entomology.
3578. Conservation Tillage — Management Principles, Plant Diseases. Michael G. Boosalis and Gilbert E. Cook. Soil and Water Conservation.
3579. Physical and Pricing Efficiency Gains from Selling Fed Cattle in the United States by Teletype. Ralph D. Johnson. Australian Journal of Agricultural Economics.
3580. Ribonucleic Acid Polymerase Activity Associated with Bacteriophage Ø6. J. L. Van Etten, A. K. Vidaver, R. K. Koski and J. S. Semancik. Virology.
3581. Computation of Dielectric Properties from Short-Circuited Waveguide Measurements of High- or Low-Loss Materials. S. O. Nelson, C. W. Schlaphoff, and L. E. Stetson. IEEE Transactions of Microwave Theory and Techniques.
3582. Solid Phase Radioimmunoassay for Plant Viruses. Ellen M. Ball. Virology.
3583. Managing the Young Dairy Calf. R. D. Appleman and F. G. Owen. Proceedings, National Dairy Housing Conference.
3584. Windbreaks and Shelter Effect. Norman J. Rosenberg. Invited Chapter for "Progress in Biometeorology," L. P. Smith, ed., Suets & Zeitlinger, the Netherlands, Pubs.

3585. Light Transmission in Field Communities of Sorghum. Max D. Clegg, William W. Biggs, Jerry D. Eastin, Jerry W. Maranville and Charles Y. Sullivan. *Agronomy Journal*.
3586. Cytogenetics of Stem-Rust Resistance in an *Agroticum* Line. A. R. Shank, J. W. Schmidt, and R. Morris. *Crop Science*.
3587. Influence of Different Formulations and Rates of DCPA and EPTC on Weed Control and Performance of Garden Chrysanthemums. S. S. Salac, W. C. Whitney, and J. D. Furrer. *Horticultural Science*.
3588. The Effect of Ration on Engineering Properties of Beef Cattle Manure. G. A. Frecks and C. B. Gilbertson. *American Society of Agricultural Engineers Journal*.
3589. Influence of Weeds on Combine Harvesting Losses in Soybeans. O. C. Burnside. *Weed Science Journal*.
3590. Effects of Heterosis on Maternal Performance and Milk Production in Hereford, Angus and Shorthorn Cattle. Larry V. Cundiff, Keith E. Gregory, Frank J. Schwulst and Robert M. Koch. *Journal of Animal Science*.
3591. Competition of Common Milkweed With Sorghum. L. L. Evetts and O. C. Burnside. *Agronomy Journal*.
3592. A Sex Attractant of the Western Corn Rootworm. Harold J. Ball and M. F. B. Chaudhury. *Environmental Entomology*.
3593. The Occurrence of Sooty Stripe on Sorghum in Nebraska. Gary N. Odvody, Larry D. Dunkle and Michael G. Boosalis. *Plant Disease Reporter*.
3594. An Electrophoretic Mutant of Cowpea Mosaic Virus. G. D. McLean and J. S. Semancik and J. B. Dixon. *Virology*.
3595. Comparative Value of L- DL- and D- Methionine Supplementations of Diets for Humans. C. Kies, H. Fox, and S. Aprahamian. *Journal of Nutrition*.
3596. Comparative Value of Various Sources of Nonspecific Nitrogen for the Human. C. Kies. *Journal of Agriculture and Food Chemistry*.
3597. An Analysis of Nutrition Information Presented in Daytime TV Serials. J. Stoedter and C. Kies. *Journal for Nutrition Education*.
3598. A Method of Simulating the Direct Solar Radiation Regime in Sunflower, Jerusalem Artichoke, Corn and Soybean Canopies Using Actual Stand Structure Data. R. Lemeur. *Agricultural Meteorology*.
3599. Cost Implications of Diversified Distribution Outlets for Purchased Farm Inputs. Dale G. Anderson and Delmer L. Helgeson. *Proceedings of International Association of Agricultural Economics*.
3600. Isolation of Transmissible Gastroenteritis (TGE) Virus From Lungs of Market Weight Swine. N.R. Underdahl, C. A. Mebus, E. L. Stair, M. B. Rhodes, L. D. McGill, M. J. Twiehaus. *Canadian Veterinary Journal*.

3601. Common Milkweed Seed Maturation. L. L. Evetts and O. C. Burnside. Weed Science.
3602. Significance of Residual Mineral N in Soils from Fertilizer Application. R. A. Olson, K. D. Frank, E. C. Seim, John Muir and A. F. Dreier. International Soil Science Society.
3603. The Residual Activity of TBZ or Benomyl Against *Cercospora Beticola* in Sugarbeets. J. H. Riesselman and J. L. Weihing. Journal of the American Society of Sugar Beet Technologists.
3604. Scheduling Irrigations Using A Programmable Calculator. Dennis C. Kincaid and Dale F. Heermann. ASAE Transactions.
3605. Irrigation of Perennial Forage Crops with Feedlot Runoff. N. P. Swanson, C. L. Linderman and J. R. Ellis. Trans. American Society of Agricultural Engineering.
3606. Dehydrated Corn Plant Pellets for Growing Calves. J. F. Karn, M. G. A. Rumery, D. C. Clanton and L. E. Jones. Journal of Animal Science.
3607. Effect of Low Dose Gamma Irradiation on Growth and Aflatoxin Production by *Aspergillus Parasiticus* L. B. Bullerman and T. E. Hartung. Applied Microbiology.
3608. \$815 For Baby Supplies. Martha Lanius Adamson and Florence S. Walker. Journal of Home Economics.
3609. Registration of Maize Germplasm Inbreds. W. A. Compton, J. H. Lonnquist, and N. E. Williams. Crop Science.
3610. Registration of Maize Germplasm Inbred Lines. W. A. Compton. Crop Science.
3611. Overwintering Capacity of *Ramulispora Sorghi*. Gary N. Odvody and Larry D. Dunkle. Phytopathology.
3612. Some Comparative Aspects of the Volatile Components of Fabricated and Conventional Potato Chips. Judith A. Kintner and Roy G. Arnold. Journal of Agricultural and Food Chemistry.
3613. Homemaking Unlimited: Does It Make A Difference? Lois O. Schwab and Charlotte Holm. Journal of Rehabilitation.
3614. Locations of Genes for Kernel Properties in the Wheat Variety "Cheyenne" Using Chromosome Substitution Lines. P. J. Mattern, Rosalind Morris, J. W. Schmidt and V. A. Johnson. Fourth International Wheat Symposium Proceedings.
3615. International Winter Wheat Performance Nursery: Agronomic, Disease, Grain Quality and Climatological Data Combined for Environmental Yield Levels. J. E. Stroikey and V. A. Johnson. Fourth International Wheat Symposium Proceedings.
3616. International Winter Wheat Performance Nursery: Agronomic, Disease, Grain Quality and Climatological Data Combined for Environmental Yield Levels. J. E. Stroikey and V. A. Johnson. Fourth International Wheat Symposium Proceedings.

3617. Breeding for Adaptation in Winter Wheats for the Great Plains. J. W. Schmidt, V. A. Johnson, A. L. Diehl and A. F. Dreier. Fourth International Wheat Symposium Proceedings.
3618. Reflectant Induced Modification of Soybean (Clycine Max L.) Canopy Radiation Balance I: Preliminary Tests with a Kaolinite Reflectant. Paul C. Doraiswamy and Norman J. Rosenberg. Agronomy Journal.
3619. Isolation and Purification of Turkey Heme proteins. D. G. Cornish and G. W. Froning. Journal of Poultry Science.
3620. Effect of Copper Binding on the Autoxidation of Oxymyoglobins. M. Emlers, N. Y. Zachariah, L. D. Satterlee and R. M. Hill. Journal of Food Science.
3621. Life History and Predatory Habits of *Philonthus theveneti* against Stable Flies, House Flies and Face Flies under Laboratory Conditions. J. B. Campbell and John F. Hermanussen. Environmental Entomology.
3622. Sulfur and Manganese Release from Soils Fertilized with Prilled Sulfur and Sulfur - Bentonite. D. L. Lindell and R. C. Sorensen. Soil Science Proceedings.
3623. Comparative Effects of Nitrogen and Sulfur Fertilization and Liming on Three Crops Grown on Four Soils. D. W. Kemper and R. C. Sorensen. Agronomy Journal.
3624. Improve Instruction Via Multi-Mediated Mechanics Material. Richard L. Douglass, James T. Horner, Richard A. Bringelson, R. L. Peterson, S. A. Weeks and U. E. Wendorff. Journal of Educational Research.
3625. Effect of Temperature and Moisture Conditions on Breaking Strength of the Egg Shell. G. W. Froning. Journal of Poultry Science.
3626. Studies on Possible Routes of Ammonium Assimilation in Soybean Root Nodules Bacteroids. Stanley D. Dunn and Robert V. Klucas. Canadian Journal of Microbiology.
3627. Self-Imposed Standards: Cleaning the Living Room. Florence S. Walker. Home Economics Research Journal.
3628. Genetic Advances in Wheat Protein Quantity and Composition. V. A. Johnson, P. J. Mattern and J. W. Schmidt. Proceedings of 4th International Wheat Genetics Symposium.
3629. A Simple, Low-Cost, Electronic Integrator and Readout. Hollis Shull. Agricultural Engineering Journal, instrument news section.
3630. Inheritance of Genes Controlling Male Fertility Restoration in the Wheat Cultivar Primepi. J. F. Miller, J. W. Schmidt and V. A. Johnson. Crop Science.
3631. Additional Evidence for Possible Autolytic Activity During Glutaraldehyde Fixation of Maize Dwarf Mosaic Virus Infected Corn. Willem G. Langenberg and Helen F. Schroeder. Phytopathology.

3632. An Effective Educational Approach for Working With Adult Farmers. D. C. Spitze, D. W. Rehm and R. S. Moomaw. Journal of Agronomic Education.
3633. Comparative Protein Value of Three Lines of Winter Wheat by Adult Human, Growing Human, and Mouse Bioassay Procedures. C. Kies, H. M. Fox, P. J. Mattern, V. A. Johnson and J. W. Schmidt. Cereal Chemistry.
3634. Fashion Perception Among Selected College Women. Gail Skinner and Patricia Sailor. Home Economics Research Journal.
3635. Comparative Protein Value of Several Vegetable Protein Products Fed at Equal Nitrogen Levels to Human Adults. Merlyn K. Doraiswamy, C. Kies and H. M. Fox. Journal of Food Science.
3636. Acceptability of Reconstituted Nonfat Dry Milk by Preschool Children. Alice Oggle and Constance Kies. Journal for Nutrition Education.
3637. Performance of Hydraulic Lysimeters as Compared with Weighing Lys. Hollis Shull and Gary Daigger. Transactions of the ASAE.
3638. Use of γ -Irradiation to Prevent Aflatoxin Production in Bread. L. B. Bullerman, H. M. Barnhart and T. E. Hartung. Journal of Food Science.
3639. Design and Operation of a Feedlot Runoff Disposal System—A Case Study. J. A. Nienaber, C. B. Gilbertson, J. R. Ellis, T. M. McCalla and F. M. Kestner. ASAE Transactions.
3640. Cell Walls of Germinating Uredospores. II. Carbohydrate Polymers. Paul Trocha and J. M. Daly. Journal of Plant Physiology.
3641. Orientation, Anatomical and Breeding Behavior Studies of the Crook-neck Rogue Fruit in Butternut Squash (*Cucurbita moschata* Poir). Aly M. Ibrahim, Dermot P. Coyne, R. C. Lommasson and Eric Davies. Journal of American Society of Forestry and Horticulture Science.
3642. Drift of Terrestrial Arthropods in an Irrigation Canal Following a Wide-Area Application of ULV Malathion. Dewey Urbauer and K. P. Pruess. Journal of Economic Entomology or Environmental Entomology.
3643. Limited Energy Supplementation of Yearling Steers Grazing Irrigated Pasture and Subsequent Feed Lot Performance. R. P. Lake, R. L. Hildebrand, D. C. Clanton and L. E. Jones. Journal of Animal Science.
3644. Intake, Digestibility, and Nitrogen Utilization of Steers Consuming Irrigated Pasture as Influenced by Limited Energy Supplementation. R. P. Lake and D. C. Clanton. Journal of Animal Science.
3645. Symposium: Recent Advances in Calf Feeding III. Breeding, Housing and Feeding Management. R. D. Appleman and F. G. Owen. Journal of Dairy Science.
3646. Lipid Comparison in Angus Bulls, Induced Cryptorchids and Steers. G. M. Weiss, V. H. Arthaud and R. W. Mandigo. Journal of Animal Science.

- 3647. Rate of Heating as it Affects the Solubilization of Beef Muscle Collagen. S. E. McCrae and P. C. Paul. Journal of Food Science.
- 3648. Creep and Relaxation of Meat Related to Tenderness. Leonard L. Bashford. ASAE Transactions.
- 3649. A Ten Year Summary of Strip Till-Planting of Row Crops. H. D. Wittmuss and D. E. Lane. Transactions of the ASAE.
- 3650. Effect of Varying the Ratio of Beef and Textured Vegetable Protein Nitrogen on Protein Nutritive Value for Humans. Constance Kies and Hazel M. Fox. Journal of Food Science.
- 3651. Lysimetric Calibration of the Bowen Ratio-Energy Balance Method for Evapotranspiration Estimation in the Central Great Plains. Blaine L. Blad and Norman J. Rosenberg. Journal of Applied Meteorology.
- 3652. Survival of *Macrophomina phaseoli* in Corn and Sorghum Stalk Residue. G. E. Cook, M. G. Boosalis, L. D. Dunkle and G. N. Odvody. Plant Disease Reporter.
- 3653. Advection and Alfalfa Evapotranspiration in an Irrigated Valley in the Central Great Plains. Hollis Shull, Dennis Kincaid, Dale Heermann and Gary Daigger. Agronomy Journal or Transactions of the ASAE.
- 3654. Registration of OTO Indiangrass. L. C. Newell. Crop Science.
- 3655. Registration of Slate Intermediate Wheatgrass. L. C. Newell. Crop Science.
- 3656. Registration of Platte Tall Wheatgrass. L. C. Newell. Crop Science.
- 3657. Accelerated Pork Processing III. Yields of Fresh Carcass Cuts. R. W. Mandigo, T. L. Thompson and G. M. Weiss. Journal of Food Science.
- 3658. Accelerated Pork Processing IV. Cured Ham, Bacon and Loins. R. W. Mandigo, T. L. Thompson and G. M. Weiss. Journal of Food Science.
- 3659. Accelerated Pork Processing. V. Frankfurter Emulsion Properties. D. E. Stilwell, R. W. Mandigo and G. M. Weiss. Journal of Food Science.
- 3660. Chemical, Physical and Organoleptic Properties of Formed and Sectioned Pork Muscle as Influenced by Size, Temperature and Comminution Method. M. S. Chesney and R. W. Mandigo. Journal of Food Science.

Abstracts

- '72-70. Physiologic Maturity in Grain Sorghum. J. D. Eastin, J. H. Hultquist and C. Y. Sullivan. American Society of Agronomy.
- '72-71. Seedling Growth of Sorghum in Clay-Sand Mixtures at Various Compactions and Water Contents. D. L. Hemsath and A. P. Mazurak. American Society of Agronomy.
- '72-72. Fertilizer Induced Changes In the Yield, Forage Quality and Botanical Composition of an Irrigated Grass-Legume Mixture. G. W. Rehm, W. J. Moline, J. T. Nichols and R. C. Sorensen. 1972 Agronomy Abstracts.

- 72-73. A Temperature Gradient Sand Bath for Seed Germination and Plant Growth Studies. M. D. Clegg. Agronomy Abstracts.
- 72-74. HSD as a Source of Nitrogen and Roughage. Larry L. Erlinger and Terry Klopfenstein. Abstract for American Society of Animal Science.
- 72-75. Whey in Urea Supplemented Corn Silage Rations. Kern Hendrix and Terry Klopfenstein. Abstract for American Society of Animal Science.
- 72-76. Sodium Hydroxide Treatment of Crop Residues. Walter Koers, Michael Prokop and Terry Klopfenstein. Abstract for American Society of Animal Science.
- 72-77. Disposal of Beef Feedlot Runoff on Corn. C. L. Linderman and N. P. Swanson. American Society of Agronomy Abstracts.
- 72-78. Effect of Level and Form of Dehy in Cattle Finishing Rations. W. W. Schneider and T. J. Klopfenstein. Abstract for American Society of Animal Science.
- 72-79. Response of Lambs Fed Pressure Treated Wheat Straw. N. N. Umunna and Terry Klopfenstein. Abstract for American Society of Animal Science.
- 72-80. The Isolation and Characterization of a New Factor, and Its Stimulation of Chloroplasts Activity. Fumio Yoshikawa and Charles Y. Sullivan. Agronomy Abstracts.
- 72-81. Performance of Hybrids Involving Selected S₂ Lines from Hays Golden and Mass-selected Populations of Corn. C. O. Gardner. Agronomy Journal.
- 72-82. Relationship Between Claw Dimension, Injury and % Slatted Floor in G-F Pigs. R. D. Fritschen, P. J. Cunningham and W. T. Ahlschwede. Midwestern Section-Abstract for American Society of Animal Science.
- 72-83. Influence of Gain and % Slatted Floor on Bone Breaking Strength in G-F Swine. R. D. Fritschen, E. R. Peo, Jr., and P. J. Cunningham. Midwestern Section-Abstract for American Society of Animal Science.
- 72-84. Effect of Estrogen-Progestogen Implants on Weight Gain and Pelvic Size in Beef Heifers. John L. Lesmeister, Earl F. Ellington and James E. Kinder. Journal of Animal Science.
- 72-85. Wheat Production with Zero Tillage. C. R. Fenster and Gail Wicks. Abstract for 1972 American Society of Agronomy.
- 72-86. Influence of Repeated Defoliation on Yield and Yield Components of *Zea mays* L. J. J. Vorst and W. L. Colville. Agronomy Journal.
- 72-87. Effect of Burial Location and Exhuming Date on Germination of 13 Weed Species. L. L. Evetts, O. C. Burnside and C. R. Fenster. North Central Weed Control Conference Research Report.
- 72-88. Optimum Temperature for Germination and Seedling Development of Hemp Dogbane. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.

- 72-89. Susceptibility of Common Milkweed and Hemp Dogbane to 11 Herbicides. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-90. Root and Top-Growth Characteristics of Six Weed and Crop Species. K. L. Burgert and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-91. Germination Characteristics of Five Milkweed Species. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-92. The Optimum Temperature for Germination and Seedling Development of Black Nightshade. K. L. Burgert and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-93. Seed Weight and Germination of 25 Selections of Common Milkweed. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-94. Depth of Emergence of Hemp Dogbane Seedlings. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-95. Perennating Activity of Hemp Dogbane Seedlings. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-96. The Effect of Soil Type and Depth of Planting on the Emergence of Black Nightshade. K. L. Burgert and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-97. Geological Nitrogen in Nebraska. E. C. Seim and R. A. Olson. Agronomy Journal.
- 72-98. Influence of Fertilizer Practices on Quality of Nebraska Water. R. A. Olson, John Muir and E. C. Seim. Agronomy Journal.
- 72-99. Influence of Weeds on Harvesting Efficiency in Soybeans. O. C. Burnside. Weed Science Society of America Proceedings.
- 72-100. Effect of DMSO on Herbicidal Activity. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-101. Control of Common Milkweed. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-102. Oat Yields the Year Following Herbicide Applications on Sorghum. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-103. Phytotoxicity of Bromacil in Different Asphalt Emulsions. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-104. Phytotoxicity of Various Herbicides Mixed in Asphalt. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-105. Lysimetric Calibration of the Bowen Ratio-Energy Balance Method for Evapotranspiration Estimation in the Central Great Plains. Blaine L. Blad and Norman J. Rosenberg. Bulletin of the American Meteorological Society.

- 72-106. Evapotranspiration by Subirrigated Alfalfa and Pasture in the Central Great Plains. Blaine L. Blad and Norman J. Rosenberg. 1972 Agronomy Abstracts.
- 72-107. A Method for Estimating Field Photosynthesis Based on Lysimetrically Determined Exchange Coefficients. Norman J. Rosenberg. Bulletin of the American Meteorological Society.
- 72-108. Control of Weeds in Soybeans by Chemical and Mechanical Methods. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-109. Control of Weeds in Sorghum with Preemergence and Postemergence Herbicides. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-110. Selective Control of Weeds in Corn. O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-111. Genetic Variation in a Green Ash Population of the Great Plains Region. Cheng C. Ying, Jean Schultz and Walter T. Bagley. The Eighth Central States Forest Tree Improvement Conference.
- 72-112. Hybrid Poplar Clones Compared. Walter T. Bagley. Journal of Forestry. v71 (1), January, 1973.
- 72-113. Volatility of Atrazine, Dicamba, Propachlor, and Trifluralin Under Moist and Dry Conditions. T. L. Lavy and J. Reeder. North Central Weed Control Conference Research Report.
- 72-114. Propachlor Mobility in Soil, Adsorbitivity to Charcoal and Subsequent Availability to Plants. T. L. Lavy and A. R. Martens. North Central Weed Control Conference Research Report.
- 72-115. Adsorption and Desorption of Atrazine, Butylate, and Picloram on Sand, Soil and Charcoal. T. L. Lavy and J. R. Ellis. North Central Weed Control Conference Research Report.
- 72-116. Herbicide Occurrence in Soils from Center Pivot Irrigation Systems. T. L. Lavy, C. W. Weidner and L. E. Wilson. North Central Weed Control Conference Research Report.
- 72-117. Biological Control of Musk Thistle. M. K. McCarty, Alex Martin and L. A. Morrow. North Central Weed Control Conference Research Report.
- 72-118. Effect of Several Herbicides on Fringed Sagebrush. M. K. McCarty and L. A. Morrow. North Central Weed Control Conference Research Report.
- 72-119. Corn Herbicide Rates When Incorporated by Center Pivot Irrigation. Russell S. Moomaw and Alex Martin. North Central Weed Control Conference Research Report.
- 72-120. Evaluation of Herbicide for No-Till Dryland Corn in Bromegrass Sod. Russell S. Moomaw and Alex Martin. North Central Weed Control Conference Research Report.
- 72-121. Factors Affecting Direct Radioassay of Herbicides in Soil. T. L. Lavy. 1973 Weed Science Society of America Proceedings.

- 72-122. Sorghum Dessication with Glyphosate and Paraquat. L. L. Evetts and O. C. Burnside. North Central Weed Control Conference Research Report.
- 72-123. Group Feeding Weaned Day-Old Pigs. David Murray Danielson. American Society of Animal Science.
- 72-124. Effect of Different Levels of Rye for Growing-Finishing Swine. David Murray Danielson. American Society of Animal Science.
- 72-125. Effect of Weed Control Treatments on Sugarbeets Planted at Different Dates. Gail A. Wicks. North Central Weed Control Conference Research Report.
- 72-126. Postemergence Weed Control for Chemical Fallow in Nebraska 1970-71. Gail A. Wicks. North Central Weed Control Conference Research Report.
- 72-127. Preemergence and Postemergence Herbicides for Selective Weed Control in Sorghum. Gail A. Wicks. North Central Weed Control Conference Research Report.
- 72-128. Effect of Applying Preemergence and Postemergence Herbicides on Cycloate-Treated Sugarbeets and Weeds. Gail A. Wicks. North Central Weed Control Conference Research Report.
- 72-129. New Herbicides for Selective Weed Control in Sugarbeets. Gail A. Wicks. North Central Weed Control Conference Research Report.
- 72-130. Control of Sandburs in Corn with Herbicides. C. R. Fenster. North Central Weed Control Conference Research Report.
- 72-131. Sandbur Control in Irrigated Corn with Herbicide. Russell Moomaw. North Central Weed Control Conference Research Report.
- 72-132. Root Distribution and Propagation of Common Milkweed. Larry L. Evetts and Orvin C. Burnside. North Central Weed Control Conference Proceedings.
- 72-133. Graduate Training for M.S. Candidates in Weed Science. Orvin C. Burnside. North Central Weed Control Conference Proceedings. 1972.
- 72-134. Phytotoxicity and Compatability of Herbicide-Fertilizer Mixtures. Alan R. Martens and Orvin C. Burnside. Proceedings of the 1972 North Central Weed Control Conference.
- 72-136. Control of Weeds in Grain Sorghum Across Nebraska. O. C. Burnside and G. A. Wicks. Proceedings of the 1972 North Central Weed Control Conference.
- 72-137. Reducing Herbicide Damage to Sorghum with Crop Protectants. Ronald F. Spotanski and Orvin C. Burnside. Proceedings of the 1972 North Central Weed Control Conference.
- 72-138. Weed Control in Field Beans in Nebraska. Charles R. Fenster and Gail A. Wicks. North Central Weed Control Conference Report.

- 72-139. A Comparative Study of Two Systems of Meal Charges in a University A la Carte with Minimum Versus Contract. Bennett D. Chilson. 1972 Food Service Research Abstracts.
- 72-140. Perceptions of Chief Hospital Dietitians. Harriet E. Carite Clark. 1972 Food Service Research Abstracts.
- 72-141. Relationship of Personal History Characteristics of Dietary Employees to Job Tenure. Rebecca Ann Dowling Wertz. 1973 Food Service Research Abstracts.
- 72-142. Comparative Value of L-, DL-, and D-methionine Supplementation of Diets for Humans. C. Kies, H. Fox and S. Aprahamian. Federation Proceedings.
- 72-143. Neonatal Calf Diarrhea: Purification and Electron Microscopy of a Coronavirus-like Agent. E. L. Stair, M. B. Rhodes, R. G. White and C. A. Mebus. American Journal of Digestive Diseases.
- 72-144. Managing the Young Dairy Calf. R. D. Appleman and F. G. Owen. Proceedings, National Dairy Housing Conference.
- 72-145. Effect of Corn Residue on Herbicide Performance Across Nebraska. Gail. A. Wicks, Russell S. Moomaw, Charles R. Fenster and Orvin C. Burnside. North Central Weed Control Conference Proceedings.
- 73-146. Effect of Varying the Ratio of Beef and Textured Vegetable Protein Nitrogen on Protein Nutritive Value for Humans. Constance Kies and Hazel Fox. Proceedings of the Annual Meeting of the Institute of Food.
- 73-147. Niacin/Protein and Pantothenic Acid/Protein Interrelationships Influencing Nutritional Value of Dry Breakfast Cereals. Anne T. H. Chan. Journal of Home Economics.
- 73-148. Comparison of the Protein Nutritional Value of Several Vegetable Protein Products at Equal Levels of Nitrogen Intake for Adult Humans. Merlyn Kalyani Doraiswamy. Journal of Home Economics.
- 73-149. Niacin Status of Adolescent Boys Consuming Corn-based Diets Under Several Total Environmental Conditions. Olga Maria Echeverri. Journal of Home Economics.
- 73-150. Sequential Evaluation of the Effect of Methionine Supplementation of Legume-based Diets for Humans. Matin Fatma. Journal of Home Economics.
- 73-151. Protein Needs and Quality of Selected Plant Proteins in 11 to 17 Year Old Boys. Mary Korslund. Journal of Home Economics.
- 73-152. Effect of Low Nitrogen Intake on Human Serum Transferrin Levels in Healthy Adults. Peter M. Ranum. Journal of Home Economics.
- 73-153. Development and Evaluation of a Training Program for Food Service Personnel in Day Care Centers. Dalia Restrepo-Ramirez. Journal of Home Economics.
- 73-154. The Nutrition Knowledge and Attitudes of Registered Nurses. Janet Pekny Vickstrom. Journal of Home Economics.

- 73-155. Relationship of Personal History Characteristics of Dietary Employees to Job Tenure. Rebecca Ann Dowling Wertz. *Journal of Home Economics*.
- 73-156. Ribonucleic Acid Polymerase Activity Associated with Bacteriophage 06. J. L. Van Etten, A. K. Vidaver, R. K. Koski and J. S. Semancik. *American Society of Microbiology*.
- 73-157. Irrigated Pastures and Stored Feeds for Dairy Cows. Myron G. A. Rumery, Paul T. Nordquist and Bertrand R. Somerhalder. *Journal of Dairy Science*.
- 73-158. Nitrogen Assimilation in Nitrogen-fixing Soybean Nodules. S. D. Dunn and R. V. Klucas. Abstracts of the Annual Meeting of the American Society of Microbiologists.
- 73-159. Acid Treated Corn for Finishing Cattle. Walter Tolman and Paul Q. Guyer. *Journal of Animal Science*.
- 73-160. Glutamate Dehydrogenases. Marvin B. Rhodes and Donald L. Ferguson. *Proceedings of the Nebraska Academy of Sciences, Inc.*
- 73-161. Remotely Sensed Thermal Imagery for Estimating Evapotranspiration Rates in the Platte River Valley. Blaine L. Blad and Norman J. Rosenberg. *The Nebraska Academy of Science*.
- 73-162. Systematized Monitoring of CO₂ Concentration and Gradients in an Agricultural Region and Implication with Respect to Air Pollution. Shashi B. Verma and Norman J. Rosenberg. *WMO/WHO Technical Conference on Observation and Measurement of Atmospheric Pollution, Helsinki, Finland, 30 July-4 Aug, 1973*.
- 73-163. Technique for Doing Longissimus Muscle Biopsies in Porcine. T. E. Socha, P. J. Cunningham, C. H. Naber and R. W. Mandigo. *Journal of Animal Science*.
- 73-164. Cross-Fertilization of Alfalfa in Relation to Forage Yield. W. R. Kehr. *Proceedings of Central Alfalfa Improvement Conference*.
- 73-165. Control of Anthracnose Root Rot of Alfalfa with Fungicides. L. T. Palmer and W. R. Kehr. *Phytopathology*.
- 73-166. Effect of an Antifungal, Pimaricin, Upon the Retardation of Food Spoilage and Incidence of Toxins. K. M. Shahani, L. B. Bullerman, H. M. Barnhart, and T. E. Hartung. *Proceeding—International Congress for Bacteriology*.
- 73-167. Comparative B-Complex Vitamin Content of Cottage Cheese Made by Culture and Direct Acidification Methods. W. Moscoso, A. M. Joe, and K. M. Shahani. *Journal of Dairy Science*.
- 73-168. Nitrogen Metabolism in Soybean Nodule Bacteroids. Stanley Dunn and Robert Klucas. *Proceeding of the Nebraska Academy of Sciences*.
- 73-169. Factors Affecting Dystocia in Beef Cows. John K. Ward. *Journal of Animal Science*.

- 73-170. Anatomical and Orientation Studies of the "Crookneck" Rogue Fruit in Butternut Squash (*Cucurbita Moschata*). Aly M. Ibrahim and Dermot P. Coyne. Horticulture Science.
- 73-171. Method of Processing Alfalfa Meal for Baby Pigs. E. R. Peo, Jr., T. Stahly, B. D. Moser and P. J. Cunningham, University of Nebraska; and G. Kohler, A. L. Livingston and R. E. Knowles, USDA, ARS, WRRRL, Berkeley, Calif. Journal of Animal Science.
- 73-172. Synthesis of Bacteriophage 06 Double-Stranded Ribonucleic Acid *in vivo*. David Coplin, J. L. Van Etten and A. K. Vidaver. American Phytopathological Society.
- 73-173. Bacteriocins of *Pseudomonas*. A. K. Vidaver and W. L. Haag. Proceedings of 2nd International Congress of Plant Pathology.
- 73-174. Characterization of Multicomponent Relicative Form Ribonucleic Acid of Barley Stripe Mosaic Virus. M. K. Palomar and A. O. Jackson. Proceedings of 2nd International Congress of Plant Pathology.
- 73-175. Porcine Fatty Acid Composition as Influenced by Sex and Diet. T. E. Socha, G. M. Weiss and P. J. Cunningham. Journal of Animal Science.
- 73-176. Studies on Vector Identification and Characterization of Haywire Disease of Potato. D. S. Magnuson, J. R. Steadman and J. S. Semancik. 2nd International Congress of Plant Pathology.
- 73-177. Influence of Exercise on Growing-Finishing Swine. G. M. Weiss, E. R. Peo, Jr., T. Stahly, B. D. Moser, R. W. Mandigo and P. J. Cunningham. Journal of Animal Science.
- 73-178. Levels of Molasses and Urea in Roughage Rations. F. G. Owen, N. B. Tharani and P. J. Cunningham. Journal of Animal Science.
- 73-179. Amino Acid Supplementation and Pelleting of High-Lysine Corn for G-F Swine. B. D. Moser, E. R. Peo, Jr., T. Stahly and P. J. Cunningham. Journal of Animal Science.
- 73-180. Estimation of Copper Uptake in Swine by Jugular Catheterization. G. L. Zoubek, E. R. Peo, Jr., T. Stahly, B. D. Moser and P. J. Cunningham. Journal of Animal Science.
- 73-181. Dehydrated Alfalfa as a Protein Source for Ruminants. Vernon Krause and Terry Klopfenstein. Animal Science.
- 73-182. Metabolism Studies with Hydrolyzed Sawdust. Larry Erlinger and Terry Klopfenstein. Journal of Animal Science.
- 73-183. Sulfite Liquor in Beef Cattle Rations. Terry Klopfenstein, Walter Koers and Stan Farlin. Journal of Animal Science.
- 73-184. The Effect of Temperature, Flake Size, and Blending on Flaked, Formed and Sectioned Pork Products. G. R. Popenhagen, R. W. Mandigo, K. R. Hansen, M. S. Chesney and L. C. Mahoney. Journal of Animal Science.

- 73-185. *In Vitro* Estimation of the Effects of Heat on Alfalfa Proteins. R. A. Britton, Chul Lee, Vernon Krause and A. L. Livingston. Journal of Animal Science.
- 73-186. Protein Supplementation of Dehydrated Corn Plant and Silage. Kern Hendrix and Terry Klopfenstein. Journal of Animal Science.
- 73-187. Appraisal of Yield Loss of Dry Beans Due to Fusarium Root Rot. J. R. Steadman and E. D. Kerr. 2nd International Congress of Plant Pathology.
- 73-188. Effect of Hormonal Implants on Weight Gain and Pelvic Size in Beef Calves. J. L. Lesmeister and E. F. Ellington. Journal of Animal Science.
- 73-189. Changes in Bovine Vaginal Mucus After Breeding. J. J. Noonan, A. B. Schultze and E. F. Ellington. Journal of Animal Science.
- 73-190. Ultrastructure of Oviductal Lymphatic Capillaries. R. K. Nayak, E. F. Ellington and D. R. Zimmerman. Journal of Animal Science.
- 73-191. Estrous Cycle Control with Progestogen Impregnated Implants. J. E. Kinder and E. F. Ellington. Journal of Animal Science.
- 73-192. A Venous Cannulation Technique for Obtaining Blood from Unstressed Swine. Dwane R. Zimmerman, B. Lantz, C. Naber, P. Koonsman and T. Stahly. Journal of Animal Science.
- 73-193. Selection for Ovulation Rate in Swine I. Population & Procedures. Dwane R. Zimmerman and P. J. Cunningham. Journal of Animal Science.
- 73-194. Estrogen Induced Oviductal Ciliogenesis in Swine. R. K. Nayak and Dwane R. Zimmerman. Journal of Animal Science.
- 73-195. A Possible Carrier State of the Bacteriophage 06 by Strains of *Pseudomonas Phaseolicoal*. B. J. Cole and A. K. Vidaver. 2nd International Congress of Plant Pathology.
- 73-196. Effect of Flavomycin on Performance of Starting-Growing Turkeys. T. W. Sullivan, and J. J. Kubicek. Poultry Science Association Annual Meeting, South Dakota University.
- 73-197. Heat Loss of Chickens as Affected by Egg Formation. F. B. Mather, E. W. Gleaves and J. A. DeShazer. Poultry Science Association Annual Meeting, South Dakota University.
- 73-198. Response of Starting Turkeys to Supplemental Methionine and Sulfate in Corn-Soybean Meal Diets. H. J. Kuhl, Jr., and T. W. Sullivan. Poultry Science Association Annual Meeting, South Dakota University.
- 73-199. The Effects of Egg Production Level, Dietary Protein and Energy Upon Consumption of Protein and Energy in Laying Hens. Richard E. Ivy and Earl W. Gleaves. Poultry Science Association Annual Meeting, South Dakota University.
- 73-200. Influence of Level and Particle Size of Calcium Supplement on Performance of Laying Chickens. D. P. Holder and T. W. Sullivan. Poultry Science Association Annual Meeting, South Dakota University.

- 73-201. Influence of Folic Acid, Vitamin B₁₂ and Pantothenic Acid on the Biotin Requirement of Starting Turkeys. D. P. Holder and T. W. Sullivan. Poultry Science Association Annual Meeting, South Dakota University.
- 73-202. The UNL Broiler Corporation As A Teaching Tool. D. P. Holder, G. W. Froning, E. W. Gleaves, F. B. Mather and T. W. Sullivan. Poultry Science Association Annual Meeting, South Dakota University.
- 73-203. Effect of Temperature and Moisture on Egg Shell Breaking Strength. G. W. Froning and D. P. Holder. Poultry Science Association Annual Meeting, South Dakota University.
- 73-204. Genetic Superiority of Commercial Layers Under Increasing Density of Housing. G. E. Dickerson and F. B. Mather. Poultry Science Association Annual Meeting, South Dakota University.
- 73-205. Isolation and Purification of Turkey Hemeprotein. D. G. Cornish and G. W. Froning. Poultry Science Association Annual Meeting, South Dakota University.
- 73-206. Feed Intake Response to Changes in Environmental Temperature and Dietary Energy in Roosters. Malik M. Ahmad, F. B. Mather and Earl W. Gleaves. Poultry Science Association Annual Meeting, South Dakota University.
- 73-207. Comparative Evaluation of Phosphoric Acid-Process Poultry By-Product Meal and Meat and Bone Meal in Turkey Diets. T. W. Sullivan, H. J. Kuhl, D. P. Holder and J. J. Kubicek. Poultry Science Association Annual Meeting, South Dakota University.
- 73-208. Evaluation of Mass Selection and of Seed Irradiation With Mass Selection for Population Improvement in Maize. C. O. Gardner. Vol. I, Proceedings of the XIII International Congress of Genetics.
- 73-209. Diet Composition of Steers Grazing Irrigated Pasture. H. L. Peterson, Robert P. Lake, J. F. Karn and D. C. Clanton. Journal of Animal Science.
- 73-210. Dehydrated Corn Plant Pellets for Growing Calves. J. F. Karn, M. G. A. Rumery and D. C. Clanton. Journal of Animal Science.
- 73-211. Urinary Creatinine/Nitrogen and Blood Urea Nitrogen as Nutritional Indicators in Cows. L. E. Jones and D. C. Clanton. Journal of Animal Science.
- 73-212. Influence of Egg Production by Pullets in Controlled Environments on Their Energy Intake. W. O. Wilson, T. D. Siopes, D. C. Lowry, C. F. Petersen, B. L. Reid and F. B. Mather. Poultry Science Association Annual Meeting, South Dakota University.
- 73-213. Microclimate Modification for Agriculture in Arid and Semi Arid Regions. Norman J. Rosenberg. Proceedings of Deserts and Arid Lands Symposium.

- 73-214. Effect of Effluent from Beef Feedlots on Physical Properties of Soil. D. G. Hinrichs, A. P. Mazurak, N. P. Swanson and L. N. Mielke. Proceedings of American Society of Agronomy Meeting.
- 73-215. Development of Synthetic Varieties of Perennial Grasses from Germ-plasm of Known Geographic Origins. L. C. Newell. Proceedings: Twenty-second Western Grass Breeders Work Planning Conference.
- 73-216. Fatty Acid Patterns of Teen-Age Boys Receiving Free and Controlled Diets. Constance Kies, L. Lin and Hazel M. Fox. Journal of Nutrition.
- 73-217. Methods to Increase Efficiency of Crop Water Use in Western Agriculture. Norman J. Rosenberg. For presentation to the American Society for Horticultural Science-Western Region June 18-20, 1973, Ft. Collins, Colo.
- 73-218. Ruminal Histamine, Lactate and Animal Performance. Walter C. Koers, W. R. Woods, T. J. Klopfenstein and R. Britton. Journal of Animal Science.
- 73-219. Intake as Related to Ruminal Histamine and Lactate. Walter C. Koers, W. R. Woods, T. J. Klopfenstein and R. Britton. Journal of Animal Science.
- 73-220. Triticale and Human Nutrition. C. Kies. Cereal Science Today.
- 73-221. Feed Additives for Swine Jowl Abscess Prevention. R. G. White and Murray Danielson. Journal of Animal Science.
- 73-222. Evaluation of Calf Scour Vaccines Under Range Conditions. R. G. White and C. A. Mebus. Journal of Animal Science.
- 73-223. Chemical and Physical Characteristics of Soil Profiles under Abandoned Feedlots. L. N. Mielke and J. R. Ellis. ASA Meeting, November 1973.
- 73-224. Soil Aggregation and Soil Fat Concentration as Influenced by Soil Management Practices. D. E. Smika and B. W. Greb.
- 73-225. Altering Milking Routines to Improve Milking Performance. R. D. Appleman and C. F. Micke. Journal of Dairy Science.
- 73-226. Biochemical Genetics of Seed and Seedling Color in Sweetclover. J. E. Specht, H. J. Gorz and F. A. Haskins. Agronomy Abstracts.
- 73-227. Inheritance of Seed and Seedling Color in Sweetclover. H. J. Gorz, J. E. Specht and F. A. Haskins. Agronomy Abstracts.
- 73-228. Studies on the Survival of Sclerotia of *Sclerotinia sclerotiorum*. G. E. Cook, J. R. Steadman and M. G. Boosalis. 2nd International Congress of Plant Pathology.
- 73-229. Utilization of Wheatgrasses Selected for Improved Yield and Quality. L. C. Newell and W. J. Moline. Agronomy Journal.
- 73-230. Composition of Turkey Meat, 1: proximate analysis as influenced by sex and age. T. E. Hartung, R. M. Hill and G. W. Froning. Journal of Poultry Science.

- 73-231. Composition of Turkey Meat, 2: B vitamin and Cholesterol content as influenced by sex and age. T. E. Hartung, Faye Johnson and G. W. Froning. Journal of Poultry Science.
- 73-232. Precipitation Nitrogen Contribution Relative to Surface Runoff Discharges. G. E. Schuman and R. E. Burwell. Agronomy Abstracts to be presented at the American Agronomy Society.
- 73-333. Methods for measuring Odorous Emissions from Animal Wastes. L. F. Elliott and T. A. Travis. Agronomy Abstracts.

PUBLICATIONS OF THE STAFF

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SB---Station Bulletin	Q3---Fall Quarterly 1972
RB---Research Bulletin	Q4---Winter Quarterly 1972
DR---Departmental Report	Q1---Spring Quarterly 1973
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**THE UNIVERSITY OF NEBRASKA
AGRICULTURAL EXPERIMENT STATIONS**

**REPORT OF INCOME AND EXPENDITURES¹
For the Year Ended June 30, 1973**

GENERAL CURRENT FUNDS

Funds Available:²

Received from United States Government	
Hatch Fund	\$ 876,120.00
Budgeted by the University	4,090,103.21
Total	\$4,966,223.21

Expenditures:

Salaries, Wages, and Staff Benefits	\$4,099,682.90
Operating Expenses	756,491.14
Equipment and Improvements	110,049.17
Total	\$4,966,223.21

RESTRICTED CURRENT FUNDS

Income:

Gifts, Grants, and Contracts	
From United States Government	
Agencies	\$1,285,595.86
From State of Nebraska Agencies	140,461.47
From Industry	295,563.82
From Foundations & Health	
Organizations	97,423.43
From Other Sources	9,513.35
Total	\$1,828,557.93

Expenditures:

Salaries, Wages and Staff Benefits	\$1,087,441.44
Operating Expenses	633,996.91
Equipment and Improvements	107,119.58
Total	\$1,828,557.93

¹These figures do not include capital expenditures of Station funds for Plant ("P" Accounts) expenditures totaling \$164,697.02

² Includes: University Research Council funds from state appropriations	\$10,864.45
and Irrigation Development Funds, Station portion	8,648.73
	<u>\$19,513.18</u>

CASH REVOLVING FUND

Income:
Sales and Services \$1,821,197.51
Expenditures:
Salaries, Wages and Staff Benefits \$ 382,521.17
Operating Expenses 1,244,904.45
Equipment and Improvements 193,771.89
Total \$1,821,197.51

AGENCY REVOLVING FUND³

Income:
Sales and Services \$1,836,587.91
Expenditures:
Salaries, Wages and Staff Benefits \$1,083,386.33
Operating Expenses 673,245.73
Equipment and Improvements 79,955.85
Total \$1,836,587.91

³Includes Meat Animal Research Center, Foundation Seed and Tractor Testing.